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EDITORIAL—SOME HIGH LIGHTS

The General Economic Scene :

Parities : The late December agreement among the group of ten ended the six month exchange rates uncertainty and the U.S. trade protection measure. The U.S. dollar has been devalued by 7.9 per cent, the dollar price of gold raised by 8.57 per cent, the German mark has been revalued by 12.6 per cent and the Japanese yen revalued by 16.88 per cent, the pound sterling and French franc maintaining their old gold price have been revalued by 8.57 per cent—all in terms of the dollar. The Swiss franc, the Belgian franc, and the Dutch guilder have been revalued by 4.61 and 2.76 per cent, while the Swedish kroner and Italian lira have been devalued by one per cent—all in terms of gold. The agreement also provides a wider 2.25 percentage margin for exchange rate fluctuation compared to the previous one per cent and the abolition of the 10 per cent import duty by the United States. In so far as this agreement introduces monetary stability and promotes international trade, it is a move in the right direction. But once more a decision which has important consequences for the developing countries has been taken without any reference to them. UNCTAD computes that as a result of the agreed currency realignments the developing countries lost $ 1,000 million and from the revaluation of gold have gained $ 300 million through the rise in the value of their reserves. Thus while the developed countries have through these arrangements both set the stage for a sizable increase in the trade between them and have increased the value of their reserves by $ 3,000 million, the Third World emerges with a net loss of $ 700 million. More serious is the fact that if the negotiations and solutions to the currency crisis had been undertaken within the universal frame of the I M F, the developing countries could have helped to bring about a truly long term currency reform. Ultimately there must be the replacing of gold by the SD Rs. and in the short term there can be the reducing of the gold content of the SD Rs. together with a decision on their quantum and a fairer distribution of the SD Rs. among all the States.

The Rupee exchange rate has been fixed at 18.9677 Rupees to the pound sterling which is a devaluation of 5 per cent in terms of the pound, 8-10 per cent of the other revalued currencies referred to earlier and an appreciation of 3.04 per cent in terms of the dollar. This new parity will in the short run inflate our import costs, our payments on foreign investment, our costs of foreign collaboration and will add to the pressure on prices in the country. On the other hand the volume of the country's trade with the U.K. and the Common Market countries which the U.K. is joining, which include Germany and France, will receive a considerable boost. In this context the decision to continue the 32 year old Indo-British trade agreement will act as a fillip to the country's textile exports to the United Kingdom, the more so, if the Generalised Scheme of Preferences is applied to these exports. The decision will allow the duty free entry into Britain of one million square yards of Indian cotton handloom goods and 40,000 square yards of Indian silk handloom items. The foreign exchange earned by the country's exports need to be increased rapidly to ensure that the country's import capacity is not seriously affected. And for this the export trade with Japan and other Asian and African countries must be further developed.

Aid: 1972 opens rather gloomily on the aid front. The Development Assistance Committee of the Organisation of Economic Cooperation and Development reports that only four out of the world's fifteen richest non-socialist countries will reach the pledged target of 1 per cent of their GNP as aid. The richest member of the Aid club, the United States, is not only nowhere near the target, with the congressional debate on the aid legislation still under way, even the declining percentage—of below 0.3 per cent of its GNP used as aid—is in doubt. The DAC conclusion is that there are no prospects of increase in official development assistance—that is, government to government assistance —either in absolute amounts or as a percentage of GNP for 1972. It would be a good record if it stagnates at round $ 6,500 million and does not actually decline.

The December issue of the Bulletin (Vol. 1 No. 11) reported on the decision of the four countries to cut or suspend their aid to India. The major aid given—the United States—has decided to maintain its decision to cut its aid to India. Accordingly the Government has made a policy decision to implement its development programmes with reduced foreign aid. At present net foreign aid is less than 1 per cent of the country's GNP and with the prospects of a sharp reduction in this reduced foreign aid component of our development efforts, the following imperatives must come into play in the country. First an increased export production and promotion drive. Second an accelerated programme of import substitution. Third increasing use of indigenous know how and reduced imports of foreign technology. Fourth increased savings by the people, for as the Prime Minister who is also Chairman of the Union Planning Commission points out, what is regarded as payments or foreign exchange gap is in reality a savings gap. Now this savings gap must be filled by an intensive savings compaign among the people of the country.

The Ceasefire and Bangla Desh: With the liberation of Bangla Desh and the ceasefire at the end of the fourteen day war, the economic impact on the economy is beginning to become clear. The first priority in Bangla Desh reconstruction is rehabilitation of its infrastructure—roads, railways, bridges, air-ports, water transport and telecommunication which have been damaged or destroyed. This phase is estimated to cost Rs. 650 crores and is to be provided by a 3-5 per cent reduction of the next two annual plans, as forecast in the December issue of the Bulletin (Volume 1 No. 11). Telecommunications have been completely restored, railway and river transport between West Bengal and Bangla Desh have been opened and over two million refugees have used these transport arrangements to return home as of early January, with some assistance in cash and kind from the Indian Government to enable them to make a start. The next phase is a programme to provide consumer and intermediate goods which are in short supply—rice, salt, kerosene, mustard oil, textiles, sugar, blankets, medicines, utensils, coal, cement, building materials as well as railway wagons and steel. This emergency supply programme which might be of the order of Rs. 100 crores, will have to be succeeded by helping Bangla Desh in developing its trade with India and other countries in its main foreign exchange earners—jute, hides, skin, fish and other primary commodities. And then of course there are the long range development needs of Bangla Desh which are being studied by its economists headed by Nural Islam (internationally well known and a close associate of the World Bank) and the Union Planning Commission. This phase will call for an initial aid of Rs. 2,000 crores.

A first audit of the fourteen day war on the economy shows there has been a spurt in industrial production particularly in the case of the defence industries, a welcome period

of industrial peace and a boost in savings—primarily through the large and speedy contribution to the National Defence Fund and the Rs. 100 crores Defence loan. Punjab which is in the forefront of the country's production effort has been severely affected by the war. It has suffered a production loss of Rs. 50 crores. Rabi sowings of wheat and other crops were stopped in the border districts, involving a loss of Rs. 30 crores. Industrial production in silk, light engineering etc. has declined by over 50 per cent (in Batala and Amritsar by over 80 per cent) involving a loss of Rs. 20 crores. Through late sowings now being pushed by the Department of Agriculture and the regular supply of coal and steel, the clearing of the transport bottleneck—both railways and roads—and the easing of credit restrictions, wheat production and medium and small industry should once more pick up. Another problem area is Bangla Desh and the States surrounding Bangla Desh where rice production has been disrupted. Here again the Emergency Agricultural Plan must make up this shortfall. Tamil Nadu on the other hand was able to expand its agricultural and industrial production—particularly cement, which is now being moved both to the extent of a half million tonnes to export sources; engineering industry which used its stock to expand its production, and tyre production. The effect on prices particularly sugar and kerosene has been causing concern.

Mid-term appraisal: At the midway point in the Fourth Plan, the way forward must take account of seven indigenous and exogenous factors. First CSO reports that growth of the economy during 1970-71 was 4.7 per cent at 1960 prices, being 0.6 per cent lower than that of the previous year. While agriculture performed better with a 5.2 per cent growth compared to the 5. 1 per cent of the previous year, mining and quarrying registered a steepfall to 1.2 per cent compared to 6.2 per cent in 1969-70, and manufacture and trade also registering a decline amounting together to 3.7 per cent. It is in mining and manufacturing that a special effort needs to be made. Second there is the expenditure on the refugees and the cost of their repatriation. Third the cost of the war and its after math of direct expenditures which have not been tabulated and their indirect effects referred to earlier plus the rehabilitation of the war casualities. Fourth is the continuing rise in prices, of which the steep rise in the sugar price (which has reached Rs. 3 per kilo) is a spectacular instance. Fifth the aid to Bangla Desh which now becomes a national obligation. Sixth the reduction in foreign aid and the adjustments in development programming that it calls for. Seventh the 10 per cent shortfall in the attainment of the physical targets of the Fourth Plan revealed in the mid-term appraisal, calling for raising Rs. 1,500 crores in additional resources during the next two and a quarter years, if the Plan is not to be seriously reduced. The Union Government will, if the taxes in the supplementary budget are maintained till the end of the Fourth Plan, be raising through them an additional Rs. 310 crores. The States will have to make an equivalent effort which will provide around 50 per cent of the additional resources needed for the balance of the period.

Thus some basic reorientation of the Plan and further revision of Plan targets are inevitable and by the time the Fourth Annual Plan starts, their main outlines should be decided. In the meanwhile the proposed five point programme—stabilising prices, increased production and decrease in non-essential consumption, reduction in imports and accelerated import substitution, increased mobilisation of savings and a reduction in deficit financing of both the Centre and the State should be put into effect immediately.

The State's 1972-73 Plan : Against this general national and international background, the State government has announced its first steps to raise additional revenues to contribute to the national defence effort and to maintain the development rhythm in the Annual Plan for 1972-73. To make a contribution to National defence, Rs. 1 crore is raised through the special lottery. Six additional taxes in the form of levies and surcharges have been imposed from 1 January to raise an additional Rs. 2 crores. In addition the cheap rice scheme now costing the State Rs. 4 crores is modified. The Electricity Board rates have been rationalised and raised in four directions. First Agricultural rates have been raised from 10.8 paise to 12 paise per unit. Despite this increase, Tamil Nadu still has the lowest State tariff and will still incur Rs. 8 crores loss per annum on its agricultural power supply. Second the high tension industrial tariff is raised by 10 per cent and non industrial tariff by 25 per cent, in place of the past 20 per cent. Third there is a merging of the tax and surcharge wherever possible. Fourth domestic consumers and low tension supply also have marginally higher rates. The effect of these revisions will be an additional revenue of Rs. 12 crores per annum for the Tamil Nadu Electricity Board, (Rs. 7.5 crores previously passed on to the government on tax, now being retained by it because of the merger of the tax and tariff,, and Rs. 4.5 crores being the net increase in its revenue from the tariff revision). This is a small compensation for the heavy annual losses suffered by the Board since 1965, consequent on the 50 per cent increase in power costs. The effects of the revision on power based industry —present and future—should be further examined and a further increase in the agricultural power tariff to make it self-sufficient should be proposed in the next round of revisions. The small price increase for agricultural power is possibly the feasible first step and, despite the opposition of the large farmers, must be followed by the next round of increases in a year's time.

The investment market in the State had its ups and downs during the past year. There was a general decline in share values due to uncertainties of the period prior to the mid-term election, followed by the refugee influx, the high rates of taxation, the general credit stringency and the national emergency and the war. However, there has been a general increase in the deposits of recognised firms with high rates of interest, calling for their regulation by the Reserve Bank. An important development in the State is the growing investment of the rural sector in both company shares and in bank deposits—a development which should be further strengthened in view of the resource needs and position of next year's Plan.

For next year,—the 1972-73 Annual Plan, the Chief Minister has successfully negotiated with the Union Planning Commission an outlay of Rs. 117 crores. This is a solid achievement because (a) the current year's approved outlay is only Rs. 74.6 crores, the Governor's March address to the legislature forecast an outlay of Rs. 100 crores and the actual is likely to be Rs. 113 crores; (b) though the National Plan is to be reduced for the many reasons referred to earlier, the State Plan will not only be not reduced but will be higher by Rs. 4 crores; (c) this higher State Plan has been established despite a 3 per cent reduction in Central assistance; which will be Rs. 39.19 crores, and a 10 per cent cut in market borrowing by the State, which will be around Rs. 20 crores; (d) relatively the State's physical target achievement is the second test in the country which has involved running a heavy overdraft which will reach Rs. 60 crores by the end of the year, for which an orderly liquidation cum moratorium procedure must be established. The

Annual Plan outlay of Rs. 117 crores provides Rs. 19 crores for agriculture, Rs. 39 crores for irrigation and power, Rs. 36 crores for education, housing and water supply, and will involve an additional taxation of Rs. 4 crores for the year. In this rather tight resource position, few new projects have been provided particularly in power generation and medium industries. Some of the recommendations of the State Planning Commission concerning power, an integrated health, nutrition and family planning services and economics in education and non-plan expenditures for the Perspective Plan might be considered by the government for the next Annual Plan as one means of improving its resource position.

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Agricultural Development :

Cotton: The new cotton variety Karunganni 8, referred to in the December issue of the Bulletin (Volume 1 No. 11) which has now been approved by the State Agricultural Council and released to the dry cotton farmers combines the hardiness of its predecessor, Karunganni 7 with the better lint quality and yield of MCU-8. It is to be grown during a five month period between October and April in the dry black soil tracts and will yield 23 per cent more lint, 6 per cent more halo length, 4 per cent more ginning outturn and 9 per cent more spinnability than K-7. It averages an additional Kapas yield of 44 kg. more than K-7. Research has also shown that the threat from the bollworm pests to this high yielding dry cotton K-8 variety can be controlled in the dry areas not only through chemical spraying but more importantly by inter planting K-8 with cholam. When cholam is strip planted alternatively with K-8, it acts as a reservoir for predator K-8, insects. The cholam predators migrate to K-8 cotton and eat the K-8 green bugs without danger to K-8. Also when chemicals are used on K-8 to destroy the predators, the nearby cholam provide a reservoir to replenish the population needed by K-8. The wide and extensive sowing of the two dry crops—K-8 and Cholam—will mean a guarantee of the safety of the cotton crop and an increase in the net income of the dry farmer in the State. This will also be an important means of making the Country self-sufficient in cotton. With the cut in foreign aid and the pressure on the country's limited foreign exchange resources, the State's extensive farming in its dry areas of K-8 together with Cholam will be a major contribution to the urgent textile needs of the country. In fact this may be Tamil Nadu's biggest contribution in replacing imported cotton on which currently Rs. 100 crores are being expended.

Maize: The State must actively propagate the growing of the three new maize varieties known as opaque—2 composities, which yield about the same as the existing best variety Ganga—3, of around 3.8 kgs. per hectare and better than the local variety with its yield of 2.3 kgs. Further unlike the current varieties which require special seed farm, opaque-2 composities produce both the crop and the needed seed. But the real advantage of this new variety is that it will go a long way in covering the protein gap in the State. Its protein content of 10-12 per cent is rich because its lysine content is double that of the existing plant. It can thus be a major element in the State's pre-school feeding programme and its high protein and caloric content makes it a good material for idlis, dosais etc. The farmer's income will not be increased by the new variety except through the increased and sustained demand. It will however give raise to suji and flour

mills and have a direct effect on the calorie and protein intake of the small farming community. Equally important together with soyabeans production, it is part of the Emergency Agricultural programme to replace the suspension of imports under the U.S. PL-480 and the children's food supply from foreign countries. This programme will help develop the low cost nutritious food for children and pregnant and lactating mother and provide the raw materials for vegetable oil and food industries in the Country.

Paddy: Rice growing tracts around Bangla Desh have been seriously affected as noted earlier. Here too, the State must make a special effort during the current season, helping the farmers to further extend and grow till as late as possible in April/May, high and quick yielding varieties. The need for self reliance accepted as a basic norm of development planning means that in the farm sector import substitution should be complete and comprehensive. The fertiliser promotion plan in the State working through the eleven laboratories and the fertiliser firms and banks must intensify the use and application of this input in rice and all food and cash crops production. In the case of paddy, the government has rightly declared the entire districts of South Arcot, North Arcot and Chingleput (in addition to Thanjavur) as notified areas so that all purchases of paddy by any dealer within these districts and movements of stocks outside are subject to the 25 per cent procurement levy.

This entire emergency programme to increase agricultural output must be sustained by an increased research and development effort on the part of the Agricultural Universities and research stations in the State. The propagation of the research results among and the education of the farmers should be undertaken as a special extension campaign by the students of the Tamil Nadu Agricultural University.

Infrastructure for the Emergency Plan: Two structures are needed for ensuring the increased production and spreading the results of the additional research and development effort in reaping and threshing rice and wheat machines, sterile cotton lines, improved milling in rice, pulses and cotton ginning, high yielding groundnut and water management as set forth in the Emergency Plan. The first structure—Farm Consultancy Services—has been initiated in a small way by the State. In each IADP district, a consultancy service cell will be made up of IADP specialists, and in other districts, the cell will be formed by four officers of the department of agriculture—the district agricultural officer, the soil chemist, plant protection officer and conservation engineer. These cells will supplement the work of the extension staff by providing technical help in field problems, use of modern methods and inputs by the farmers and so ensure their participation in all the projects under the Emergency Plan. This is a good start. It should be speedily expanded by the Department of Agriculture through registering private consultancy services which can be set up by agricultural University graduates and scientists with the help of State loans now given to technical personnel. Such registered consultancy services will act as a liaison between government, research centres, credit agencies, input supplying firms and the farmers in (a) combining a knowledge of the techniques, the local agroclimatic conditions and the individual farmer's needs and feelings, (b) undertaking market surveys and supplying market information for the products the farmer wishes to grow, (c) helping in the popularisation and sale by firms of fertilisers, chemicals and equipment in relation to the individual farmer's needs, (d) recommending the breeds of animals suited to the area and their nutritional needs, (e) helping to liberalise and make effective all the varied

schemes of farm tenancy. Such a development of a private consultancy system for farmers is envisaged in the State Government's current initial programme. Possibly the government should adopt legislation to promote and standardise the growth of this service. The employment generating potential and the encouragement of the principle of self employment through this structural development as an important fall out to promoting farm production need no further emphasis.

The other structural reform is one proposed by the National Commission on Agriculture—the creation of a new agency, (quite apart from the cooperative system which the commission gives up to the affluent farmers who control it anyway) to be called the farmers Service Society, which will function at the block level and through a union of the block societies at the district level to provide in an integrated manner the credit, input and marketing services needed by the weaker section of the farming community. This structure will be first established in the areas where the special programmes for the small, marginal and dry farmers have been started and their financing will be provided by the nationalised banks. The Societies service will be integrated in the sense that it will cover the complete range of farm produce up to the marketing stage (the Tamil Nadu Agricultural Product Markets Bill recently passed by the legislature will be made effective by the Service) and include ancillary farm occupations of animal husbandry, dairy, fisheries, farm forestry and rural arts and crafts. Each society should serve a farm population of not more than 5,000 for effective functioning. These two new structures—Farm Consultancy for large and medium and the Farmers Service for Small farmers will bring about a transfotmation in the farming occupation of the State.

Credit: Another facility to achieve the expanded production targets is the Rs. 46.76 crores Tamil Nadu Agricultural credit project, now in its fourth month of operation. The part of the project dealing with financing of the minor irrigation works from the World Bank Credit of Rs. 26.25 crores was detailed in the last issue of the Bulletin (Vol. II No. I). In addition 6000 high power tractors are to be imported, and Rs. 2 crores spent on levelling the Parambikulam Aliyar area. The whole programme is being administered by the Tamil Nadu Land Development Bank which has for this purpose constituted a technical cell consisting of an agricultural engineer, an agricultural economist, and a water utilisation engineer. The primary land development banks process applications from farmers for the different types of loans for minor irrigation or land levelling or land drainage or farm mechanisation or any combination of these four purposes. The banks have lent Rs. 20 crores last year and have so far lent Rs. 15 crores this year for which the target is Rs. 30 crores. The rules for this credit scheme ensure that the farmer contributes 10-20 per cent of the capital cost of the loan project in personal labour and cash, that the well or another minor irrigation work is used to the maximum for the village benefit, that the proper utilisation of funds is assured through a system of instalment and indirect payments and that there are minimal formalities and redtape. To further finance the scheme, the Reserve Bank has allowed the Land Development Banks to accept 1 or 2 year fixed deposits at special interest rates. The project is making a sizable impact on the small farmer in the State.

Water: Further to the comments on the State's water development made in the last two issues (Vol. 1 No. 11, and Vol. II No. 1) the Vaigai flood tragedy in December and its effects on lives and property in Madurai city, Sholavandhan and other places further

reinforces the need for a water policy in the State and for strict regulations the local authorities can enforce and that the citizens must accept concerning water use and management, including the use of river beds. This tragedy could have been avoided if the warnings of the local authorities had been heeded by those living in the area. Also in addition to the Rs. 2.71 crores scheme referred to in the last issue, (Vol. II No. 1) the State water supply and drainage Board has submitted to the Life Insurance Corporation a comprehensive programme to provide protected water supply to arid and endemic regions in the State at an estimated cost of Rs. 8 crores. L.I.C. has already given Rs. 5 crores towards the Rs. 21 crores Veeranam Project which will increase the city water supply by 40 million gallons per day by 1976. Another important water project is the Somasila project under which Tamil Nadu and Andhra Pradesh will share the waters, this State getting 500 cft. out of the scheme. The Ganga-Cauvery project is yet another programme—all of which underline the urgency for a water policy and machinery for the Country and the State.

Plantations: The need for renovation of the Plantation industry was referred to in the last issue (Vol. II No. 1), particularly in view of its role in Tamil Nadu's export trade which was Rs. 19.27 lakhs in 1969-70, being second only to hides and skins. The industry occupies one per cent of the cropped area in the State and breaks down as follows.

TABLE 1

District		*Area in hectares*				
		Tea	*Coffee*	*Rubber*	*Cardamom*	*Total*
Nilgiris	...	22,394	8,681	345	180	31,500
Coimbatore	...	10,126	1,173	221	900	12,420
Tinnevelly	...	472	222	29	100	823
Madurai	...	925	9,034	143	3.500	13,612
Salem	...	—	3,999	23	200	4,222
Kanyakumari	...	481	72	7,681	—	8,234
Tolal	...	34,398	23,188	8,352	4,880	70,811

TABLE 2

Crop		*Production in Tamil Nadu*	*Total Production in South India*	*% to S. Indian Production*
Tea	...	55.9 m. kg.	101 m. kg.	54.8
Coffee	...	9,930 tonnes	107,795 tonnes	9.2
Rubber §	...	4,100 ,,	71,054 ,,	5.8
Cardamom	...	250 ,,	3,260 ,,	7.8

§ latest figure available for the State.

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Industrial Pointers :

Critical Industries : Within the framework of the policy announced on December 31 to permit 54 critical industries to produce more either by working three shifts or by exceeding their licensed capacity by 100 per cent, Tamil Nadu's cement, paper, tyres, drugs, textiles, basic metals, fibres, and sugar industries should expand their production rapidly, provided raw materials and transport facilities are correspondingly made available. This intensified production schedule will also indicate the size and timing of capacity expansion in Tamil Nadu's critical industries. The 1970-71 report of the Tamil Nadu Industrial Investment Corporation shows an uneven performance of some of these critical industries in the State—textiles, sugar, metals etc., resulting in production shortfalls, idle capacity and short working periods. These in turn have created a serious problem in recovery of loans from these units. The current industrial policy in expanding production, if accompanied by a proper scheduling of raw materials supply, should overcome this problem of arrearages and ensure capacity utilisation. The Corporation is engaged in concessional financing covering a 10 per cent subsidy, reduced interest rates, extended repayment holiday and amortisation to the 10 backward areas in the State—Ramanathapuram, Mudukalathur, Sivaganga, Paramakudi, Tirupathur, Melur, Thirumayam, Alangudi and Kulathur—as well as 8 backward districts identified by the government. These incentives apply to small scale industries, self employed technicians, rural medical practitioners as well as to activities in the backward areas. The government's active support of this programme involves finance, advice and guidance. The Corporation's request to the World Bank to be allocated some foreign exchange to avoid the time consuming procedures that small industries face with the Union Government and its request to the State government to increase its financial subsidy and make its loans interest free to compensate for the Corporation's underwriting of units with long gestation period deserve favourable response.

Metals : In view of the shortfall in the output of copper, 14,000 tonnes against the target of 56,000 tonnes, and that of zinc, 38,000 tonnes against the target of 56,000 tonnes, the production of aluminium assumes added importance. Madras Aluminium, the capacity of which is being expanded to 18,000 tonnes, should also take in hand the next expansion phase which will increase its output to 25,000 tonnes. Together with Indian Aluminium and Hindusthan Aluminium, the Madras Aluminium production should exceed the Fourth Plan target of 2.10 lakh tonnes. The problem is for the Fifth Plan, when the self sufficiency policy will call for further expansion in output of this metal and for that plans must now be made through feasibility studies for new plants.

Petroleum Products : Another of the critical industries, the refineries in the State and Country have weathered the war strains and now face the problems of the Teheran agreement adjustments and the devaluation of the dollar. The intensification of production of indigenous crude and the expanding of the power supply of the State will help in facing these problems. The refinery bye products need to be fully exploited. In this connection the Madras Refineries proposal for establishing a Parafin Wax Plant should be speedily approved. The feasibility report on the project indicates that project will cost Rs. 4 crores, meet the growing demand for paraffin and other types of wax for various industrial purposes and will have a high pay off. Madras Refinery is now in full operation and is able to use the large output of naptha. So too is Nagpal Petro Chemicals which is moving into production with the Refinery supplying the needed feedstock.

Sponge iron and mechanised bricks: The Tamil Nadu Industrial Development Corporation is establishing a plant for the manufacture of sponge iron in the State. The export of iron ore which faced some uncertainties during the war because of the decision of Japanese shippers and firms has now returned to normalcy. It is necessary that an increasing part of the vast ore resources of the country should also be used within the country and from this point of view as well as from that of meeting indigenously the growing demand, the plant for sponge iron in the State is timely. Also the third mechanised brick factory has started production as from this month at Maduravayal. It is a Rs. 62 lakh plant and produces 50,000 bricks a day against a 66,000 brick capacity. This initiative is a valuable aid to the programmes of the State Housing Board and the Slum Clearance Board.

Sugar: Currently the sugar situation is a serious mess very largely due to the Union Government's uncertain policy and delays to which reference was made in Vol. 1 Nos. 10 and 11. In January the price spurted to Rs.3 per kg., the second highest after the Rs.5 per kg. in 1967-69. The present difficult situation can be quickly cleared up if adequate sales are made through fair price shops and a supply of 3.5 lakh tonnes—not 3.25 lakh tonnes—flows smoothly into the market. In view of the continuing rise in prices, the sugar industry in the State has agreed to hand over 60 per cent of the monthly releases to the government at a price of Rs. 150 per quintal for distribution through fair price shops. At bottom, the price rise has been due to the expected fall in cane production in 1971-72. The actual production is high and the sugar output is likely to be 36 lakh tonnes. What is now needed is cooperation between government, the industry and the trade to ensure increased production of quality cane for the next year. The demand for sugar next year will be around 40 lakh tonnes for internal consumption plus 2 lakh tonnes for Bangla Desh plus a small 5-6 lakh tonnes for export. Plans should now be made for a production target of 48 to 50 lakh tonnes for the coming year. From this point of view, it is good that sugar factories will be paying higher prices to cane growers than the statutory minimum of Rs. 73/70 per tonne, as reported in the annual report of Cauvery Sugars and Chemicals limited, which will also be meeting the demand of the Union Minister of Agriculture that Tamil Nadu producers should pay at least the minimum. The expansion and diversification of the Kothari group will also improve the sugar situation. The cooperative sector in the industry has also promised to play its part. What is needed is an extension of the area and quality of cane production and in this the price factor is one important incentive. It is also important that improved varieties be rapidly introduced to raise the State recovery average above the 8 to 8.5 percentage.

Oils: Another area where a special effort is needed is in vegetable oils where the shortages have persisted, the per capita consumption declining from 5 kg. in 1960-61 to 4.5 kg. in 1970-71, being around 50 per cent of the world average. The production of groundnut has improved, Tamil Nadu's marketable surplus increasing from 4.75 lakh tonnes last year to an estimated 5.75 lakh tonnes for this year. The State prices of groundnut and oil have been high at Rs. 175/0 per bag and Rs. 450/- per quintal of oil and it is the Reserve Bank credit curbs which have brought prices down to Rs. 160 and Rs. 420. With the Pollachi crop coming on the market and the supplies from the State Trading Corporation, despite the war demand, prices have declined to Rs. 140 and Rs. 370 respectively. The demand for vanaspati and edible oils will increase this year with the added

demand from Bangla Desh. There is need to expand the dry farming groundnut areas in the State, despite their increasing unit yield, in order to meet this growing demand and to compensate at least in part for the cut in PL-480 imports of soya bean oil and mutton fallow. Some oil imports from the socialist countries may also be needed to keep prices down.

Diesel loco production: The decision by the Southern Railway in favour of the progressive dieselisation of locomotives is economically justified. It will save Rs. 4 crores per annum over the use of coal, which costs Rs. 85 per tonne (Rs. 10 more than for other zones), and enable use of locomotives for 19 hours instead of 12 hours per day, with a 70 per cent increased hauling capacity. For these reasons the establishment at Tiruchirapalli of the Rs. 1 crore diesel loco shed with an initial production capacity of 50 locomotives which will be increased to 100 locomotives is to be welcomed. It will meet the dieselisation needs of the southern metre-gauge sector. This shed will require 650 tonnes of steel and 1450 tonnes of cement and around this plant will grow a number of small scale and ancillary industries with considerable employment potential.

Railways: Further to dieselisation, is the need for an expansion of the railway net work of the State to keep pace with its high industrialisation, tourism growth and general development. The present mileage of 2218 miles (494 broad and 1,724 metre) is totally inadequate in terms of the broad-gauge needs, link lines, electrification etc. The main broad-gauge sector—Madras-Coimbatore—is very overloaded in relation to capacity and the single track metre-gauge is a development bottleneck. The State Government projects which include building over bridges over its 2718 railway level crossings (of which 1617 are unmanned), the Karur-Tuticorin broad-gauge project, the Tuticorin—Tiruchendur 20 mile link, and the Tirunelveli-Trivandrum via Kanyakumari and Salem—Cuddalore broad-gauge transformation should be provided for in the remaining years of the Fourth and in the Fifth Plan.

Textiles: Coimbatore plants have improved their performance during the year. Despite high working costs and rising raw materials prices, they are breaking even and showing a profit. Yarn stocks are moving normally and production is being increased. The perennial problem of stock accumulation has now ceased to be of importance. With the continuation of the Indo-British textile agreement referred to earlier and with the demand from Bangla Desh for yarn, the State's textile industry should be further geared to increase its production schedules.

Neyveli: Neyveli Lignite Corporation is once more facing a serious problem of losses. Since its start in 1955 upto March 1970 its accumulated losses amounted to Rs. 26 crores. For 1970-71 its losses rose to Rs. 10 crores and for the current year the expected profit of Rs. 1 crore is likely to be replaced by an even higher loss than that of last year. To some extent, this is a misleading statistical picture. As a highly capital intensive industry with a long gestation period, what are termed losses are really its amortization payments for large interest and depreciation payments. Its annual receipts are well above its expenditures. There is, however, a problem and that has to do with the interlinked inter-dependent nature of the complex. Due to faulty machinery, outdated equipment, and lack of proper care and maintenance of the equipment, there is a fall in the output of

lignite, which is the feeder for all its other units. The fertiliser plant which has a 1 lakh tonnes capacity is working only upto 50 per cent capacity because of the cut in lignite supply, and the 600 mw. thermal power plant is working only to 70 per cent capacity. Immediate action is needed to install machinery to increase the mining capacity in order to raise the production of lignite to 6.7 million tonnes per annum. Too much of the State's industrial and employment complex depends on Neyveli for this situation to continue uncorrected.

Industrial Relations: The State's industrial performance has been effected by the continued disturbance in the Simpson group, despite the optimistic forecasts made in previous issues of the Bulletin (Vol. 1 No. 10 and Vol. II No. 1). The Indian Institute of Management has compiled some revealing statistics on work stoppages for four States including Tamil Nadu.

Comparative Statement of Work Stoppage, 1967-1970

States	*Year*	*No. of work stoppage*	*Men involved*	*Man-days lost*	*Average duration in days*
Maharashtra ...	1967	721	315,735	2,201,519	7.0
	1968	647	313,330	1,696,869	5.4
	1969	646	207,811	1,272,455	6.1
	1970	533	208,830	1,433,484	7.0
Tamil Nadu ...	1967	241	116,690	1,091,131	9.4
	1968	270	218,781	2,348,138	10.7
	1969	204	67,506	736,668	10.9
	1970	199	133,319	1,195,042	9.0
Gujarat ...	1967	124	30,487	308,952	10.1
	1968	93	23,626	129,141	5.5
	1969	72	17,624	132,816	7.5
	1970	110	54,376	336,504	6.1
West Bengal ...	1967	438	165,000	5,016,000	30.4
	1968	417	263,000	6,723,000	25.5
	1969	894	670,000	9,381,000	14.0
	1970	865	463,000	9,783,000	21.1

It is interesting to note that though Tamil Nadu's number of stoppages are lower than West Bengal and Maharashtra, in the number of men involved and man days lost, Tamil Nadu is relatively worse off than Maharashtra and West Bengal and in the average duration of the stoppage is much worse off than Maharashtra.

The general conclusion of the Management Institute study is that it is a lost cause to expect trade unions to keep off politics and therefore for political parties to keep off unions. All unions have a political orientation and in some form or other wish to seize or

influence State power to build a particular form of society. If this is so, given the political orientation of trade unions, it is necessary to involve all their members in all their operations and so redefine the concept of the bargaining agent. This seems to be a fairly realistic approach.

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Education & Science :

State wide discussion of the reform and regeneration of the education and science system of Tamil Nadu referred to in the last issue of the Bulletin (Vol. II No.1) continues. The Silver Jubilee State Education Conference of the Association of University teachers held at Pachayappa's College, Madras, at the end of December brought together some 400 univerity and college teachers to consider educational reforms. The tone of the conference was set in the inaugural comment by the State Governor who bluntly stated that the standards of the Madras University had fallen in recent years, compared to the past and the current record of other universities and suggested that the conference concentrate on this key issue. The Vice-chancellor of Madras University referred to the academic constraints in the way of raising standards and detailed the reform programme now under way and under consideration in the University. The Educational Minister pointed to the large and growing investment in higher education by the State and private sources and suggested that the task of the conference was to devise a system under which there could be a high pay off for this investment. The four seminars into which the conference divided came out with a series of useful suggestions for reforming higher education in Tamil Nadu, improving the status and technical expertise of its teachers and laying a solid base for fruitful student-teacher relationship. Three of the conclusions have an immediate bearing on the current demand for educational reform. Higher education must be made functional and examinations must be made subsidiary to teaching and be an indication of the student's hidden potential. The teacher must function in an environment where he can be in living touch with each student, which would involve increasing the number of teachers and decreasing the current rush of students into higher education. Third the financing of higher education should provide an equitable sharing between public and private sources of financing and should promote solely quality education and compensation for poor students.

A second occasion for a similar dialogue with regard to Tamil Nadu science was the symposium in late December organised by the Institute of Mathematical Sciences, Madras, on Fifty Years of Mathematical Education in India. The occasion was the centenary of Mr. Ramaswamy Iyer, the founder of the Indian Mathematical Society and himself a great mathematician. The symposium brought together 100 mathematicians, scientists and educators who discussed the current status of mathematics education at the school and university level. The principles of curricular reform—rolling reform, rolling research, coherence and comprehensiveness—were emphasised and recommended as a basis for mathematics and subject reform in the State. The present sharp division of elementary and higher mathematics needs to be abandoned and arithmetics education should be completed in the elementary school. There needs to be close relations between research institutes like Matscience and the Ramanujam Institute and the University and college teachers both for updating the syllabus and mutually enriching teaching and research in the State.

The third forum where educational reform and science and technology changes in Tamil Nadu were debated was at the Annual conference of the Academy of Humanities, Science and Technology in early January held at the P.S.G. College of Technology, Coimbatore. The conference was attended by 250 university teachers and students in the natural, social and human sciences and engineering, agriculture and technology. Four major issues emerging from the wide ranging discussion relate to the reform movement currently under way. First the crisis of numbers in higher education in the State was debated and the means of ensuring equality of educational attainments to all students, through selective admission, compensatory education, changing the educational structure by making school education a disaggregated 10 year programme, and college education a 2+2+2 or 2+3+2 staging, together with a grounding in values were high lighted. Second there was wide support particularly among the engineers for the proposal to establish a technological univerity for Tamil Nadu composed of the following 9 institutions: College of Engineering, Guindy, Madras, Government College of Technology, Coimbatore, A.C College of Engineering and Technology, Karaikudi, Government College of Engineering, Salem, P. S. G. College of Technology, Coimbatore, Institute of Technology, Coimbatore, Theagarajar College of Engineering, Madurai, Regional Engineering College, Tiruchirapalli, Madras Institute of Technology, Madras. The major justification for this proposal is the generally accepted principle of educational decentralisation which will enable the individual institutions to formulate course contents, teaching and educational methods in relation to universal norms and local needs and enable the proposed university to make changes in engineering education to meet the growing demands of diversified industries and services in the State. The unresolved question is how the other sound educational principle of inter disciplinarity and unity of knowledge would be conserved under this proposal. Third the need to include an element of self study and independent enquiry and investigation in under graduate and post graduate education, together with machinery to associate students in college and university reform proposals and decisions were high lighted. Fourth there was general agreement that the system of internal evaluation and the semester programme should gradually replace the present examination system and academic terms in the universities and colleges of Tamil Nadu.

The computer centre in the College of Engineering, Guindy runs six courses every year since 1970, to train scientists, engineers, business managers, educators, librarians and government officers in computer programming. The centre which is equipped with an IBM 1620 Model II electronic digital computer with 40 K memory is the only software programme in the State. It also provides consultancy and programme services to 28 government departments, universities, research centres and private and public business concerns. With the establishment of the large computer facility in Indian Institute of Technology, Guindy, Tamil Nadu would become an important centre for training and diffusing automated programming and management techniques, which are the main bottleneck for the development breakthrough of the State and the Country.

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Planning the family, health and the economy :

In the first article in the last issue of the Bulletin (Vol. II No. 1) on Problems of Growth in Tamil Nadu-1970, Tamil Nadu being in the forefront of the State in having a policy with regard to our run away population and promoting a sound family planning

programme integrated into the general development compaign of the State were referred to. January saw the conclusion of the second State wide drive on family planning education and the sterilisation campaign for the year, headed by the Chief Minister, who, concluding the Royapuram celebration reminded the people that unchecked population growth was dangerous to the community and family and that the family planning compaign was a success because people wholeheartedly welcome the laudable idea of a small family. That is the essential turning point—the realisation of the importance to each family in the State of a small family. The average family particularly in the rural area is not going to be moved either by the formidable statistics of the population explosion or the spectre of war or famine that is associated with it. What the family head can understand is the relation between having a small family and having a little more food and clothing, a little more education for each member and a little more saving for his old age. The drive headed by the Chief Minister, the Health Minister and in fact the entire State Government harps on this key point for the people. In addition the employment problem faced by the State resulting from the unrestricted population increase troubles the government and gives further urgency to its family planning and development programmes. The target for 1973-74 of 32 births per 1000 people will be reached by this State. Its people are now beginning to see the advantages of a small family and in consequence its target of sterilisation for the year 1,76,000 has been passed.

Each year's 22 million child births from the 100 million couples, include 13 million in the first to third child group, and 9 million in the fourth child and later group. If the first child can be saved and its mortality rate which is currently very high reduced, the objective of a small family of one or two children will be more readily accepted by the parent. The State's plan for fortified food for all children will cover every child within the next five years. Milk consumption is another important element in this nutritious diet programme. The State needs a daily production of 144 lakh litres of milk compared to the current daily production of 29 lakh litres. The Rs. 10 crores Hosur scheme of milk production and livestock development will both contribute to this nutrition target and raise farm incomes.

Against this general background of education, health, improved income and family planning, the proposed legislation to raise the age of marriage from 15 to 18 for girls and 18 to 21 for boys is sound and needed. There is empirical evidence that when the marriageable age of girls is raised to 20, the birth rate is reduced by 12 to 50 per cent and that if raised to 18, it causes a fall in birth rate of 30 per cent. The Sharada Act of 1929 which pioneered this form of social legislation fixed the ages at 15 and 18. But the 1961 census showed that the median age of rural marriages was 16.1 and urban 17.1. The median represented, however, a wide range of 20 for girls and 24 for boys in Kerala to 13 and 15 in Rajasthan and Madhya Pradesh. In Haryana 69 per cent of girls and 39 per cent of boys were married below the age of 15, 26.4 per cent of the brides and 11.5 per cent of the grooms being below age 10. And so the proposed legislation is a move in the right direction. Unlike the Sharada Act, it has an enforcement machinery and which the officers have the double function of educating the people and reporting violations of the law. Tamil Nadu will be foremost among the States which will enforce the law fully.

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January Madras Development Seminar :

From January 1972, the monthly seminar for the year has a single theme—science and Technology for Indian and Tamil Nadu development. The January seminar paper, 'New Agricultural Technology in Tamil', by Dr. Mrs. B. N. Chinnappa, Lecturer in Statistics, University of Madras appears as the main article in this issue.

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Second article :

To commemorate 1972 which has been declared by Unesco as the International Book Year, an article, Books for All, appears as the second article in this issue.

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Correspondence :

A comment by Dr. V. Shanmugasundaram on the main article in January issue (Vol. II No. 1)—Problems of Development in Tamil Nadu 1970—appears in the correspondence section.

NEW AGRICULTURAL STRATEGY FOR RICE CULTIVATION IN TAMIL NADU.

By

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1. Introduction :

1.1. A news item in the Indian Express of the 9th of January 1972 states that "for the first time in the history of India, the country has become self-sufficient in rice. From 1972 onwards the country will not import rice for domestic requirements....During 1970-71 the highest per hectare yield was achieved in Tamil Nadu which produced 1974 kg. per hectare * The historic and excellent performance can be attributed largely to the release of half a dozen high yielding, short duration, fertiliser responsive varieties of rice which are widely adaptable to varying climatic conditions in the country".

1.2. This laudable achievement of the country and specially of Tamil Nadu is the result of the recent vigorous production-oriented effort of the Government and the enthusiastic participation of farmers in these efforts to adopt modern methods of rice cultivation with the requisite physical inputs of high-yielding seeds, water, fertilisers, pesticides etc. Adaptive research and favourable seasonal factors have contributed in no small measure to this success. The nineteen-seventies may well be hailed as the decade, of the rice revolution.

1.3. This paper seeks to trace the growth of the production of rice in Tamil Nadu, and the measures in agricultural planning that have led to this break-through. An attempt is made to view the achievement in its proper perspective with respect to the constraints to its further development that need to be tackled effectively if the tempo of growth is to be maintained. A brief discussion of the impact the rice revolution is likely to have on the socio-economic structure of the State follows.

2. Rice cultivation in Tamil Nadu :

2.1. Rice is Tamil Nadu's most important food-crop. It is the staple food of its people and accounts for about 75 per cent of the total food-grains produced and 50 per cent of the gross area sown in the State (1970-71). Rice cultivation is the major occupation of nearly 73 per cent of its rural population which is engaged in agriculture. Tamil Nadu is one of the important rice growing States of India in terms of area,** output and productivity. It ranks third in area under paddy (7.5 per cent of India's total area

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* Note : The all-India per hectare yield for 1970-71 is 1134 Kgs. Scope for further improvement in productivity is apparent on comparison with the yield rates of rice in Japan—3853 kgs. per hectare (1967), Spain—4087 kgs. per hectare (1967), all-world—1434 kgs. per hectare (1967). Source : India, Pocket Book of Economic Information, 1970.

** Source : Area, Production and yield of Principal crops in India 1949-50 to 1967-68: Summary Tables Directorate of Economics and Statistics.

under paddy is in Tamil Nadu), third in production (contributing 11.3 per cent * of India's rice) and first in productivity per hectare among the States of India.

2.2. The entire State is almost completely sheltered from the heavy South-West monsoons by the high Western ghats that mark its western border. The main rainy season is from October to December when the Southwest monsoon is in retreat and weak depressions or violent cyclonics form in the Bay of Bengal and move onshore, bringing in the North East monsoon. The normal rainfall in the State is 945.7 mm. per annum. About half the area of the State is semi-arid. The crop is therefore grown mainly in wet lands irrigated by canals, tanks and wells. Tamil Nadu is noted since ancient times for its extensive irrigation works. 87 per cent of its area under paddy is irrigated (1970-71), this being the highest proportion for any State in India. About 35 per cent of the total irrigated area in the State is fed by canals, 36 per cent by tanks and 27 per cent by wells (1970-71).

2.3. The most fertile tract for rice cultivation is the rich delta area of river Kaveri** in Thanjavur district. Double cropping and sometimes triple cropping of rice is resorted to where there is an assured supply of water. The rice culture in the State is the most varied in the whole of India with the crop standing for periods varying from about 3 months to 8 months in different seasons and areas, and its cultivation being undertaken in conditions varying from purely rainfed to purely irrigated—due to the enormous range of soil and climatic conditions in the State.

3. **Achievements in Rice Production :**

3.1. Table I and Figure I give the data for area, production and yield per acre in rice for Tamil Nadu for the years 1951-52 to 1970-71. Whereas, the acreage under rice cultivation which was increasing gradually over the years has not shown much increase in the past few years (note the severe drop in acreage in 1968-69 because of the drought—one of Tamil Nadu's worst in the century, with rainfall at 692.5 mm., 28 per cent less than normal), the production and yield per acre have spurted since 1969-70. This sudden and significant increase has been brought about by the new agricultural technology aided (but not entirely caused) by bountiful rainfall. The rainfall in 1966-67 which was also preceded by two years of drought was 22 per cent above normal as compared to 10 per cent above normal in 1969-70; yet the increase in production and recovery from the earlier year's drought was far more remarkable in 1969-70. (Table 2). The scope for increasing production by bringing in more acreage under cultvation being more or less exhausted, the impetus to increased production has come through the intensive cultivation methods of the new agricultural strategy. The performance of two to three years is not sufficient evidence of the shape of things to come. The performance at the district level, even in Thanjavur where the maximum efforts and resources have been applied since 1960-61, has not stabilised. In the event of another severe drought it is difficult to hazard a guess as to whether the production of rice would register a steep fall. The important thing to note

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* Source: Area, Production and yield of principal crops in India 1949-50 to 1967-68: Summary Tables, Directorate of Economics and Statistics.

** Note : Kaveri is noted as the world's most useful river for irrigation. 95 per cent of her utilisable waters are used for irrigation as compared to 68 per cent of the waters of the Egyptian Nile which claims the next position.

is that the production curve is definitely on an upward trend; the new technology has demonstrated that substantial increases in production are possible. Efforts must be made to stabilise and sustain the pace of growth achieved these last few years and step up research efforts in evolving strains that would yield even more and not be affected by the vagaries of the monsoon.

TABLE 1

Rice acreage, production and yield rate in Tamil Nadu and Thanjavur district.

	Tamil Nadu			Thanjavur		
Year	*gross area (1000 hectares)*	*production 1000 tonnes)*	*yield rate (kgs per hectare)*	*gross area (1000 hectares)*	*production (1000 tonnes)*	*yield rate (kgs per hectare)*
1.	2.	3.	4.	5.	6.	7.
1951-52	1789	2129	1190			
52-53	1744	2021	1159			
53-54	2081	2580	1240			
54-55	2159	2797	1296			
55-56	2208	3002	1360	546	612	1121
56-57	2316	3247	1402	556	678	1219
57-58	2266	3288	1450	576	789	1370
58-59	2273	3134	1380	577	851	1475
59-60	2315	3333	1439	590	886	1502
60-61	2518	3559	1413	598	901	1507
61-62	2538	3907	1540	598	1016	1699
62-63	2666	4024	1510	611	926	1516
63-64	2619	3876	1480	604	894	1480
64-65	2626	4036	1537	602	1040	1728
65-66	2502	3524	1409	609	911	1496
66-67	2689	3791	1410	608	877	1442
67-68	2660	3846	1542 (1)	729	1353	1856
68-69	2373	3659	1542	628	1167	1859
69-70	2695	4532	1682	648	1204	1859
70-71	2686	5303	1962 (2)	not available	1301	not available
71-72 target		5400				

Source: Tamil Nadu, Economic Appraisal 1971, for columns (2) to (4) and Season and Crop Report for Tamil Nadu for columns (5) to (7) (1) should be 1446? (2) should be 1974?

Note: There are discrepancies up to the order of 20 per cent in the data on area and production given in the above sources and in those given in the Summary Tables 1949-1968 of the Directorate of Economics and the Progress report for the IADP in Thanjavur 1960-67 prepared by the Joint Director of Agriculture, Package Programmes, Thanjavur.

TABLE 2

Rainfall in Tamil Nadu

normal per annum rainfall = 945.7 mm.

Year	*rainfall in mm.*	*% increase over normal*
1958-59	748.9	—21
59-60	821.9	—13
60-61	978.3	+ 3
61-62	867.0	— 8
62-63	931.4	2
63-64	907.6	4
64-65	859-1	9
65-66	870.9	— 8
66-67	1152.8	+22
67-68	958.8	+ 1
68-69	682.5	—28
69-70	1036.7	+10

Source : Tamil Nadu—An Economic Appraisal, 1971.

4. **Planning for increased rice production and the new agricultural strategy in Tamil Nadu :**

4.1. The strategy adopted for agricultural development in the country has been classified by Dr. M. S. Swaminathan, Director General of the Indian Council of Agricultural Research, as 'general' in the period 1947-61, 'intensive' in the period 1961-65 and 'specialised' since 1966.

4.2. *The General strategy (1947-61)* : This covers the period since Independence to the end of the Second Five Year Plan. In this period, the Grow-More-Food Campaign of 1942 that was introduced to meet the food scarcity of the war time years, was re-oriented and integrated with the Community Development Programme (CDP). Development of agriculture was one of the prime functions of the CDP. The Japanese method of rice cultivation was successfully introduced in some important rice growing areas. High priority and substantial allocations were given to irrigation schemes, power projects and roads, in the First and Second Five Year Plans thus laying the foundation of the basic infrastructure required for introducing the new agricultural technology.

TABLE 3

Expenditure on agriculture and allied programmes in Tamil Nadu in the Five Year Plans.

Plan	*Agriculture and allied programmes* [1]		*Irrigation* [2] *and power*		*Roads.*	
	Rs. in lakhs.	*percentage of total investment*	*Rs. in lakhs.*	*percentage of total investment*	*Rs. in lakhs.*	*percentage of total investment*
1st (1951-52 to 1955-56)	957	12.03	5043	62.74	270	3.36
2nd (1956-57 to 1960-61)	1713	9.12	9671	51.51	547	2.91
3rd (1961-62 to 1965-66)	5102	14.82	15066	44.03	1169	3.42
Annual 1966-67	1952	23.57	3258	39.36	207	2.50
,, 1967-68	2058	22.97	3779	42.17	203	2.27
,, 1968-69	1710	18.23	4643	49.49	130	1.39
4th (1969-70 to 1973-74) budget estimate	9106	14.60	20885	33.49	2504	4.02
4th actual in 1969-70	1776	20.75	4190	48.95	163	1.90
1970-71	1646	17.35	3504	36.93	273	2.88
1971-72	1773	16.62	3228	30.25	378	3.54

Source : Tamil Nadu, An Economic Appraisal, 1971.

(1) : includes agricultural production, minor irrigation, soil conservation, ayacut development programmes, animal husbandry, dairying and milk supply, forest, cinchona, fisheries, warehousing and marketing.

(2) : irrigation including inland waterways and flood control, excluding minor irrigation.

4.3. *The Intensive Period (1961-65)* : This phase occurred during the period of the Third Five year Plan. 1960-61 marked the beginning of the New Agricultural Strategy with the initiation of the Intensive Agricultural District Programme (IADP) popularly known as the Package Programme. This programme was based on the recommendations of the Ford Foundation team of experts who were invited to study India's food crisis in 1959. The basic recommendations of the team which were incorporated in the programme were that resources and efforts should be concentrated in districts which enjoyed assured irrigation facilities and were relatively free from natural hazards, instead of diffusing them on a variety of schemes in wide spread areas. An intensive effort would be made in each

selected district to provide the physical and institutional inputs required so as to optimise returns to scarce investible resources.

4.4. Thanjavur district was chosen for the IADP in Tamil Nadu and a package programme for increasing agricultural production was introduced. The needed inputs like seeds, credit, fertilizer, pesticides and implements were made available to the farmers at concessional rates. In the initial years, steps were taken to organise the input supply lines so that they reached the farmer in adequate quantities at the appropriate times. However, until the discovery and introduction of the high-yielding varieties of seeds that could exploit the full potentials of these inputs, the results of the programme were not encouraging. It was only in 1967-68, with the introduction of HYV rice strains, notably ADT-27, a cross between a Japanese and an Indian strain, developed in the State's Agricultural Research Centre at Aduthurai, and with efforts to intensify cultivation by converting single crop Samba lands to multiple cropping in the kuruwaithaladi pattern, that rice production in Thanjavur picked up. (Refer Table 1 and Figure 1). Thanjavur has also been chosen as one of the 5 innovative districts among the 17 districts adopting the IADP in India, and is consequently benefiting by special technical assistance in planning, implementing, evaluating and reporting the plans for the new agricultural strategy.

4.5. The improvements in productivity that the IADP brought to Thanjavur (see Table 4) not only helped in increasing rice production, demonstrating the effectiveness of the new strategy, but also proved that the farmer is not tradition bound and is willing to experiment with new innovations in agriculture.

TABLE 4

Average yield of rice in Kgs. per hectare.

Year	*Non-IADP areas*	*in participants holdings in IADP areas*	*% increase of (ii) over (i)*
1960-61	1333	1543	15.8
1961-62	1491	1945	30.4
1962-63	3339	1644	22.8
1963-64	1267	1600	26.3
1964-65	1334	1757	31.7

Source : Progress of IADP in Thanjavur 1960-67, by the Joint Director of Agriculture, Package Programme, Thanjavur.

This has also encouraged the Government in organising extension work for the development of rice cultivation in all the districts.

4.6. The Intensive Agricultural Area Programme (IAAP) initiated in 1964-65 was similar in its approach to the IADP but on a smaller scale, and was limited to specific crops. In Tamil Nadu, the IAAP for rice was introduced in the districts of Chingleput, Madurai, Coimbatore and Tirunelveli in 1964-65 and in Tiruchirapalli in 1970-71. The area coverage under the scheme since its inception is given in table 5.

TABLE 5

Achievements of the Intensive Agricultural Area Programme (IAAP).

Year	*Area in 1000 hectares*	*Production in 1000 tonnes*	*Yield in Kgs/ hectare*
1965-66	217	976	4498
66-67	488	1029	2109
67-68	758	1108	1462
68-69	837	949	1134
69-70	814	1277	1569
70-71	961	2054	2137
target for 1971-72	1081		

Source : Note on Agriculture Demands 1971-72, Agricultural Department of Tamil Nadu.

4.7. *The specialised period (since 1966) :* While the IADP and IAAP programmes were being continued, the unprecedented droughts of the 1960's lent a sense of urgency to the efforts to improve the food situation. The biological revolution brought about by the new HYV seeds was assisted by a variety of specialised programmes introduced since 1966 which, while concentrating on individual aspects of the agricultural strategy, worked in an integrated manner to establish a new pattern for the growth of agriculture in the State. Specialists in the fields of agronomy, multiple-cropping and agricultural information were appointed in each district to work on local problems and help in overcoming them. What marked a departure from earlier efforts was the seriousness and sincerity with which these programmes were implemented, and the enthusiasm of the farmers in participating in them. The various specialised programmes introduced in the State and the efforts made to improve the supply of the requisite inputs and their adoption in the recommended doses are described in the following sections.

4.8. *The High-Yielding Varieties Programme (HYVP) :* This programme introduced in 1966-67, was the basic programme of new agricultural strategy and envisaged an integrated approach for the introduction of the new HYV paddy seeds by ensuring availability and application of the inputs at the optimum levels, simultaneously providing the credit facilities and know-how required for the package of modern agricultural practices. Table 6 shows the increase in acreage under the HYVP for paddy in Tamil Nadu since 1966-67. From about 7 per cent of the paddy area in 1966-67, the HYVP has spread to 68 per cent in 1970-71 and is likely to spread to at least 70 per cent in 1971-72. The big strides taken by the HYVP in Tamil Nadu stand out in comparison with the progress of the HYVP in paddy at the all-India level, where it increased from 0.25 per cent of the paddy area in 1966-67 to about 12 per cent in 1969-70. The high paddy area under irrigation (40 per cent in the State and the vigorous efforts made by the Government to push production may be counted as the main factors that have helped in this spectacular spread of the HYVP in Tamil Nadu.

TABLE 6

The progress of the HYVP for paddy in Tamil Nadu by variety of seed

(area in 1000 hectares)

Year	*ADT*	*CO29*	*CO25*	*IR 8*	*IR 5*	*TN 1*	*Tai-wan*	*Kar-una*	*Jaya*	*Pad ma*	*total HYV paddy*	*% paddy area under HYV.*
1966-67	159 (83%)	13 (7%)	18 (9%)	...	...	2 (1%)	1	...	...	...	192 (100%)	7.14
1967-68	340 (70%)	44 (9%)	96 (20%)	5 (1%)	...	1	0.4	...	...	...	485	18.23
1968-69	344 (54%)	104 (10%)	134 (22%)	53 (8%)	...	...	...	...	...	...	635 (100%)	26.76
1969-70	305 (27%)	110 (10%)	325 (28%)	396 (35%)	6	...	...	...	...	...	1142 (100%)	42.37
1970-71	323 (18%)	205 (11%)	399 (22%)	748 (41%)	134 (7%)	...	...	8 (1%)	2	1	1819 (100%)	67.72
1971-72 (target)											2024	70.01*

Source : Agricultural Compendium, Tamil Nadu 1971-72.

Note : percentage in columns (1) to (10) give the proportion of area under each variety to the total area under HYV paddy in that year.

* Estimated.

The table brings out the fact that the High Yielding Varieties that are being popularly sown are changing over the years. ADT 27 has decreased from 83 per cent HYV area in 1966-67 to 18 per cent in 1970-71. IR8 has increased from 1 per cent in 1967-68 to 41 per cent in 1970-71. Profitability and consumer acceptance guide the choice of the farmer, given the availability of the seed required by him. Initially there was hesitation in cultivating the IR8 variety because of the greater cost in its cultivation, its greater susceptibility to pests and poorer quality of grain. That resistance has been overcome mainly because of the exceptionally high yields it is capable of (yielding an excess of about 1000 kgs. per hectare as compared to traditional varieties) and gradual acceptance by the consumer. Further efforts are being made in evolving seeds like the IR20 (introduced in 1970-71) that have the high productivity of the IR8 combined with improved grain quality.

4.9. The district-wise spread of the HYVP in Tamil Nadu in 1970-71 is shown in Table 7. It shows that most of the districts have covered at least 40 per cent of their paddy areas with the HYVP and that the popularity of different strains considerably between districts.

4.10. *The Navarai Crash Programme*: This programme was launched in 1969-70 for the cultivation of IR8 paddy in the districts of Chingleput, South Arcot and North Arcot. The targets and achievements in 1000 hectares are:

District		Target	Achievements
Chingleput		40·47	100·59
South Arcot		37·23	63·77
North Arcot		63·94	84·71
	Total	141·64	249·07

Source: Narrative Notes on Programmes Annual Plan 1971-72.

This programme is unique in India, the special feature being encouragement of the farmer to adopt the recommended practices by arranging for door delivery of the requisite inputs in mobile vans. The cultivator was charged at the rate of only 1 paise per kg. of input, the rest of cost being borne by the Government.

5. **Supply of various inputs.**

5.1. *Land—Multiple Cropping Scheme (MCS)*: There is little scope for an increase in the net cropped area in Tamil Nadu. In 1970-71, of the total area of 13 lakh hectares of land in the State, 64.1 per cent is classified as arable land which comprises of 48.3 per cent net area sown, 10·8 per cent fallow land, and 5.0 per cent cultivable waste. About 1/5th of the net area sown is under multiple cropping. The multiple cropping scheme was introduced in 1967-68 as part of the new agricultural strategy to increase the gross cropped area. This was facilitated by the introduction of the HYV paddy that are of shorter duration, maturing in 105-110 days as compared to 140-160 days for the traditional varieties. Some of these HYV have the additional advantage of not being season bound because they are photo insensitive and their growth is independent of the length of the day. They can therefore be grown through-out the year, in any season, and are ideal for multiple cropping. Crop rotation is an important ingredient of the MCS, rice being alternated with jute or millets. Irrigation facilities are being improved wherever the MCS is in progress to assure adequate water supply throughout the year. Continuous soil testing is done and fertiliser supply is ensured so as to replenish the nutrients in the soil that might have been exhausted by repeated cropping. Another important ingredient of the MCS is adaptive research. Special attention is being given to pilot projects to be set up for demonstrating the suitability and profitability of multiple cropping and organising the physical inputs, financial resources, and farm management technique required to make the scheme successful. These pilot projects are to be set up in one agricultural division in each of Thanjavur, Tiruchi and South Arcot districts. The bulk of the MCS is attempted in Thanjavur district for converting the single crop samba lands to double crop areas.

5.2. *Land-Soil Testing and Soil Conservation*: There are 8 soil testing laboratories in the State which regularly take samples from the farmer's fields. Some of the co-operative societies also have plans to set up soil testing laboratories and many of the private fertiliser firms undertake soil analysis to help the farmer. A main drawback in this scheme is that the results of the soil analysis are conveyed very late to the farmer, and there is insufficient follow up action on its basis. The extension offices have an important role to play in this regard. A soil conservation scheme has been launched to protect land from erosion by water and wind, to conserve soil moisture and to provide for contour bunding, gully control, and water management in agricultural lands.

TABLE 7

District-wise coverage of paddy area by the HYVP in 1970-71

(area in 1000 hectares)

District	ADT 27	CO 29	CO 25	IR8	IR5	total HVY	total area[1] under paddy 1969-70	% of paddy area) under HYV
Chingleput	17 (10%)	64 (35%)	2 (1%)	92 (51%)	6 (3%)	181 (100%)	342	53
North Arcot	13 (9%)	41 (29%)	1 (1%)	78 (55%)	9 (6%)	142 (100%)	316	50
South Arcot	22 (14%)	29 (18%)	36 (22%)	57 (34%)	19 (12%)	163 (100%)	280	51
Salem	16 (30%)	10 (19%)	...	28 (51%)	...	54 (100%)	85	64
Dharmapuri	6 (18%)	10 (29%)	...	18 (53%)	...	34 (100%)	49	70
Coimbatore	13 (18%)	12 (16%)	3 (4%)	45 (61%)	4.0 (1%)	73 (100%)	101	72
Thanjavur	152 (30%)	...	263 (52%)	51 (10%)	41 (8%)	507 (100%)	648	78
Tiruchirapalli	36 (30%)	12 (10%)	38 (31%)	21 (17%)	14 (12%)	121 (100%)	236	51
Madurai	2 (2%)	6 (8%)	4 (4%)	60 (83%)	2 (3%)	74 (100%)	161	45
Ramanathapuram	...	1 (14%)	...	103 (86%)	...	104 (100%)	265	39
Tirunelveli	4 (2%)	8 (13%)	5 (8%)	39 (63%)	5 (9%)	61 (100%)	152	41
Kanyakumari	0.4 (2%)	0.4 (22%)	4 (22%)	13 (68%)	1 (6 %)	19 (100%)	575	32
Nilgiris	...	...	...	...	...	...	32	...

Source : Fertiliser Compendium of Tamil Nadu 1970-71.

(1) Note : Districtwise area under paddy for 1970 — 71 was not available; Hence data for 1969-70 was used, since it is observed that at the Tamil Nadu level, the area under paddy has not changed appreciably between 1969-70 and 1970-71.

TABLE 8

Progress of coverage under the multiple cropping scheme in Tamil Nadu.

Years	Area in 1000 hectares.
1967-68	100
1968-69	220
1969-70	400
1970-71	490
1971-72	530

Source: Tamil Nadu, an Economic Appraisal and Note on Agriculture Demands 1971-72.

6. HYV-seed:

6.1. Seed is the main base for the agricultural revolution in rice. Improved crop varieties developed in the research laboratories of the State and at National and International Centres have shown promise of yields that can even quadruple that of traditional varieties. Research is being intensified to evolve seeds that are capable of better yields and are more adaptable to the varying soil and climatic conditions in the State, and are acceptable to consumers. Efforts to speed the process of transmitting the new seeds and the new technology from the research stations to the farmers have been criticised as too hasty. Some of the recent strains that have been distributed for cultivation have not been tried over a sufficient number of generations in the seed laboratories to stabilise their quality, before distribution. Direct trials of HYV seeds in the farmer's own fields rather than in fixed demonstration plots have helped considerably in convincing the farmer of their potential and inducing him to participate in the HYVP. Many of the farmers in Tamil Nadu today are well informed of the modern cultivation methods and are anxious to adopt them and improve their yields.

6.2. A major advance was the development of a number of HYV seeds with different characteristics which gave a wide choice to farmers. Tables 6 and 7 indicate the varieties that have been tried over the years. The all-India Co-ordinated Rice Improvement Programme (AIC-RIP) is developing new HYV seeds and advanced technology to go with it. In Tamil Nadu there are seed research stations at Aduthurai in Thanjavur district and at Coimbatore. There is also a seed testing unit at Coimbatore and a seed processing unit in the co-operative sector at Tiruvarur. More such units are to be set up in the future. It is essential that the farmer is not deprived of the benefits of the HYVP because of inferior quality or adulterated seeds and thus led to underestimate the potentialities of HYV seeds. There are 232 seed farms for the multiplication and supply of HYV seeds and 2000 tonnes of HYV seeds are to be distributed at the primary level in 1971-72.

7.1. *Water*: *Irrigation Scheme*: One of the basic requirements for success of the HYVP is correct water-management. The HYVs require and are responsive to high doses of fertilisers which will destroy the plants if not supplemented by the correct amount of water required. Almost all the available surface water resources in Tamil Nadu have been tapped. Of 29 million acre-feet of utilisable surface water, a little more than 28 million were used by the end of the Third Year Plan. Further expansion in irrigation is being achieved by exploiting underground water by means of energising wells and drilling bore wells. Electrification has contributed not a little to the success of improving the irrigation facilities in the State. 71.5 per cent of the hamlets have been electrified (1970-71) and by 1972-73 a crash programme for electrification seeks to electrify all the villages of

Tamil Nadu. The high priority given to irrigation and power projects in the five year plans is evident from Table-3. The progress in area irrigated and measures taken to improve irrigation facilities are shown in table 9A and 9B.

7.2. As noted earlier, rice occupies about 74 per cent of the irrigated area in Tamil Nadu, utilising about 89 per cent of the irrigation resources. Though the irrigated area under paddy has been increasing over the years, it fluctuates substantially with the rainfall in each year. The data show that the 1966-67 level of area irrigated that declined during the droughts has not been reached till 1970-71. New schemes have been started to tap the ground water potential in each district by the Ground Water Division of State PWD.

7.3. It has been observed that the traditional methods of rice cultivation are highly wasteful of water specially because they use water as a substitute for weedicides. Whereas India uses 1800 gallons of water to produce 1 lb. of rice, Japan gets the same yield with only 600 gallons of water. Also about 55 per cent of irrigation water is lost in transit. Modern cultivation methods educate the farmer in the economic use of water and help in conserving available water supplies and increasing their utility. The HYV seeds, specially IR8, are highly economical in their use of water.

7.4. The small farmer who cannot avail himself of the credit loans offered by the Government and other institutions because of security has not been able to tap the ground water potentials in his fields, and is forced to rent water from the neighbouring rich farmers. It has been observed in parts of South Arcot that landlords claim as much as 1/3rd the produce of the land as rent for water hired out. This works disadvantageously for the smaller farmer and discourages him from adopting the HYVP. The Small Farmers Development Schemes (see section 12) have been initiated to help the small farmer in this regard.

TABLE 9 (A)

Progress of irrigation in Tamil Nadu.

Year	*Paddy area irrigated in 1000 hectares*	*% of paddy area irrigated.*	*energy sales for irrigation in million units*	*No. of pumpsets energised.*
1951-52	1669	93.3		
52-53	1578	90.5		
53-54	1925	92.5		
54-55	2013	93.2		
55-56	2064	93.5	92.76	32,440
56-57	2093	90.3	126.34	45,173
57.58	2110	93.1	206.75	62,726
58-59	2083	91.7	278.02	79,733
59-60	2075	89.6	342.09	97,476
60-61	2305	91.6	365.82	1,17,695
61-62	2347	92.5	425.00	1,40,601
62-63	2447	91.8	501.49	1,65,561
63-64	2393	91.4	559.40	1,92,424
64-65	2403	91.5	658.83	2,25,192
65-66	2297	91.8	785.47	2,56,594
66-67	2486	92.4	732.20	2,89,903
67-68	2472	92.9	997.69	3,44,483
68-69	2124	89.5	1073.62	4,10,119
69-70	2356	87.4	1036.94	4,70,776
70-71	2347	87.4	1005.58	5,30,044

Source : Tamil Nadu, An Economic Appraisal 1971.

TABLE 9 (B)

Progress of irrigation in terms of wells.

Year	*private tube-wells*	*bore-wells*	*filter point tube-wells.*	*deepening wells.*	*state tube-wells.*
1968-69	2088	639	2678	859	
69-70	2205	568	2055	1248	10
70-71	2237	699	1559	1220	7
target 71-72	2300	700	2500	1050	10
4th plan target	10,000	4000	10,000	4000	50

Source : Note on Agriculture demands 1971-72.

8. Fertilisers and Manures :

8.1. Because of the fact that the HYV seeds are highly responsive to fertilisers and manures, the demand for fertilisers in the State has increased steadily with the spread of the HYVP. The Madras Fertilisers Plant at Manali, the biggest in the country, offers a variety of combinations of fertilisers. The naptha-based fertiliser complex proposed to be set up in Tuticorin will be the biggest of its kind in Asia. Table 10 shows the progress in the off-take of fertilisers in Tamil Nadu.

8.2. Simultaneously, attempts are being made to step up the production and consumption of green manure and of rural and urban compost.

8.3. Various studies have shown that the participating farmers do not adopt the recommended level of dosage of fertilisers because of the cost and risk involved. Further research into the farmers' attitudes and ways and means to encourage them to apply the recommended dosage are needed.

TABLE 10

Consumption of fertilisers in the State in 1000 tonnes.

Year	*Nitrogeneous (N)*	*Phosphate (P_2O_5)*	*Potassic (K_2O)*
1955-56	21	4	...
56-57	25	38	...
57-58	23	25	...
58-59	26	34	...
59-60	28	35	...
60-61	23	10	...
61-62	33	8	4
62-63	48	10	5
63-64	55	11	7
64-65	70	19	7
65-66	72	27	18
66-67	85	44	32
67-68	96	30	30
68-69	113	35	31
69-70	148	42	33
70-71	180	60	50
71-72 (expected)	190	60	50
73-74 (expected)	274	103	67

Source : Tamil Nadu, Economic Appraisal, 1971.

9. Plant Protection Measures :

9.1. The luxuriant foliage of the new High Yielding Varieties attract more pests and diseases than the traditional varieties. Intensive and timely plant protection measures are required to meet these threats and prevent losses in output. (It has been noted that the adoption of the recommended dosage of pesticides by itsef increases the yield of IR8 seven-fold).

9.2. Prophylactic chemicals, sprayers and dusters are distributed to the farmers at subsidised rates. There are 5 pesticide testing laboratories in Tamil Nadu that exercise quality control over the pesticides supplied to the Government by the various factories. Aerial spraying of pestides has been progressively and successfully adopted in Tamil Nadu. The State leads the country in this respect, half of the country's total acreage that is aerially sprayed being in Tamil Nadu. An Agro-Aviation division with 5 helicopters is proposed to be set up by the Tamil Nadu Agro-Industries Corporation. This project will be the first of its kind in the public sector in the Country and will bring an additional 2 lakh hectares under aerial spraying when it commences.

Table 11 shows the progress of the acreage under plant protection measures. Further education and extension efforts are needed in this aspect, since most farmers are scared of using these measures because overdoses are likely to be dangerous to human beings and animals. Stray cases of deaths due to inhalation of pesticide fumes and the extra physical effort required for hand spraying has deterred many farmers from using pesticides and has retarded the progress of the HYVP.

TABLE 11

Acreage covered by Plant Protection Measures in 1000 hectares.

Year	*Plant protection measures*	*aerial spraying*
1968–69	2587	116
1969–70	2941	79+
1970–71	4500	282+
1971–72 (expected)		263

Source : Tamil Nadu, Economic Appraisal 1971 except for + for which the source is Note on Agricultural Demands 1971 – 72.

10. Credit :

10.1. Various institutions have been set up in the State to provide the required credit to the farmer for adopting modern agricultural practices, and freeing him from the clutches of the village money lender who charges exhorbitant interest rates. Inspite of the tremendous progress in this regard, the red tapism involved in the granting of loans, misuse of credit facilities for non-agricultural purposes (due to poverty and non-availability of credit for non-farm purposes), lack of credit facilities for the small farmer who does not have the required security have prevented the farmers from benefiting substantially from these institutions. The village money lender continues to be an important and much sought after source of credit in rural areas. The 1951-52 Rural Credit Survey found that 93 per cent of the rural credit is provided by individual credit agencies like moneylenders, traders, relatives and landlords of which money lenders alone supplied 70

per cent and that the major portion of loans from co-operatives went to bigger agriculturists, and that about half of the borrowed funds was used for unproductive family purposes. The manner in which the credit is distributed to the farmer, its adequacy, and timeliness and the uses to which it is being put need to be investigated and improved.

10.2. Co-operative societies, land development banks, the Tamil Nadu Agro-Industries Corporation and commercial and nationalised banks have initiated schemes to help the farmer. Co-operative societies provide credit and facilities for marketing the produce. All the villages are covered by agricultural credit co-operatives. Table 12 shows the increase in the number of agricultural co-operative societies, their membership and the issue of loans. The co-operative land development banks provide long term finance to the farmer for development of land and minor irrigation projects. The agricultural Refinance Corporation provides medium and long term credit to augment the credit facilities available from other institutions, specially for major development projects.

TABLE 12

Agricultural Co-operative Societies

Year	*Primary credit societies*		*Primary land development banks*		*Agricultural loans in lakhs Rupees*	
	No.	*Membership (000)*	*No.*	*Membership (000)*	*Productive*	*Non-productive*
1965-66	11227	3799	104	281	2970	32
66-67	10618	3225	105	306	3120	20
67-68	8412	3268	105	340	4113	17
68-69	7255	3193	106	547	4357	17
69-70			173	653		

Source: Tamil Nadu—An Economic Appraisal 1971.

11. Agricultural Implements:

11.1. Improved agricultural implements such as tractors, electric pumpsets etc., have a vital role to play in the package programme of the new strategy. The State Agro Industries Corporation supplies oil engines, electric pumpsets, power drillers and tractors to the farmers on a hire-purchase basis. It also arranges for the import of tractors, supply of spare-parts and accessories, and after sales services. Table 13 shows the increase in the number of various kinds of farm implements in the State.

TABLE 13

No. of Agricultural Implements.

	1951	*1956*	*1961*	*1966*
Ploughs (wooden)	2890,000	2851,000	3223,000	3423,000
,, (iron)	57,000	77,000	207,000	348,000
Carts	669,000	640,000	665,000	628,000
Tractors (Govt.) } ,, (Private) }	224	287	181	469
		535	1269	2809
Oil engines with pumps	13,768	29,761	36,832	42,852
Electric pumpsets	13,702	23,968	98,481	208,485

Source: Tamil Nadu, Economic Appraisal 1971.

Table 14 shows the achievements of tractors in the State in levelling land and in mechanised cultivation.

TABLE 14

Tractor Achievements (in hectares)

Year	*levelling*	*mechanised cultivation*
1966–67	3562	4660
67–68	3822	7226
68–69	3895	8716
69–70	3692	9944
70–71	4731	14196
71–72 (target)	4870	14580

Source : Note on Agriculture demands 1971 – 72.

11.2. It is expected that in the Fourth Five Year Plan, the co-operatives and land development banks will be able to finance the purchase of at least 300 tractors per annum on a hire-purchase basis and that the Agricultural Departments fleet of tractors will be augmented by 50 crawler type and 50 wheel type tractors. Five service centres and four workshops will also be set up at different strategic points in the State to minimize the time lost due to break-downs in farm machinery.

12. Small Farmers Development Schemes :

About 60 per cent of the farmers in the State are small farmers owning holding of less than 5 acres each. The Small Farmers Development Agency was set up in 1970-71 to help the potentially viable small farmers in 15 selected community development blocks distributed in the districts of South Arcot, Madurai and Tirunelveli. A small farmer is defined, for the purposes of the scheme as one who owns 2 to 3 acres of wet land or 3 to 5 acres of dry land. The agency will provide subsidized capital to the small farmers for investment in digging and improving wells, installing land reclamation, poultry and dairy development. A similar scheme has also been initiated to help the landless agricultural labourer and sub-marginal (having less than 1 acre of wet land or 2 acres of dry land) and marginal (having 1 to 2.5 acres of wet land and 2 to 5 acres of dry land) farmers in the districts of Salem and North Arcot. The object is to help these farmers and labourers who live at the subsistence level to maximize production in their small holding by intensive cultivation, animal husbandry etc., by adopting improved farming practices for which resources would be made available to them at subsidised rates. The Small Farmer's Co-operative Life Irrigation Societies provide credit to help groups of small farmers who cultivate contiguous blocks of land to develop lift irrigation facilities.

13. Post Harvest Facilities :

To enable the farmer to realise better prices for quality produce, grading, storing and marketing facilities are being offered to him by co-operative and institutions set up

by the Government. New techniques in drying and storage of rice have been developed. These are vital for preserving rice that is harvested in the rainy season, and in the development of the multiple cropping scheme.

14. Agricultural Research and Education :

A sum of Rs. 15.22 lakhs has been set apart in the 1971-72 annual State plan for various buildings programmes for the Agricultural College and Research Centre at Coimbatore and for the Agricultural College at Madurai. An Agricultural Research Station will be set up at Dharmapuri. Rs. 21.44 lakhs have been set apart for various agricultural research schemes in 1971-72. A new Agricultural University has started functioning in Coimbatore since June 1971 to train specialists in agricultural research and extension schemes. The Regional Agricultural Research Centre at Aduthurai has done commendable work in evolving rice strains and technology. A deep water rice research centre is functioning at Talainayar. The State has 6 farmers' training centres.

15. Constraints to the progress of the New Agricultural Strategy.

15.1. The many constraints to the progress of the New Agricultural Strategy are the inferior quality, inadequate and untimely supplies of the various inputs—seed, water, fertilisers, pesticides, credit, farm implements etc., erratic (untimely, insufficient or excessive) rainfall, pests and diseases, poor soil quality and insufficient soil testing and follow-up action, inadequate infrastructure for transport, grading, storage and marketing of the produce, poor consumer acceptance of some of the new grains and consequent low prices. The preceding paragraphs have described the progressive measures taken in Tamil Nadu to overcome these constraints.

15.2. Besides the above, it should be noted that the farmer's attitude plays a crucial role in the strategy. It has been observed that his educational level and age also play a role in his adoption of the HYVP*. The actual achievements of the new varieties on farmer's fields are much lower than those in the demonstration plots, which in turn are lower than the potentials realised in the laboratory experiments. In one of the studies on HYVP it has been observed that only 50 per cent of the yield obtained in the laboratory was achieved in the demonstration plots and only ·40 per cent was achieved in the participant farmers' fields. One reason for such poor results on the farmers' fields is the risk involved in HYV cultivation. It needs much more effort and resources and is therefore costlier than the cultivation of traditional varieties. (Some studies have shown that it is about thrice as costly). The risk element in growing the HYV is an important constraint to its adoption by farmers. It is feared that HYV cultivation is more prone to failure because of the vagaries of the weather or input supplying agencies, and because of attacks by pests and diseases than the traditional varieties that have been evolved after decades of experience as the most stable varieties involving the minimum risks and most adaptable to the local soil and climatic conditions. Also each innovating farmer tends to compromise between maximising yields and minimising inputs, thus failing to achieve the full potentialities that the HYV are capable of.

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* Source : A study of factors influencing adoption of improved agricultural practices by farmers– Ramakrishna Mission Vidyalaya, Coimbatore.

15.3. Further adaptive research is needed. The economics and profitability of the new rice technology should be demonstrated to the farmer in a convincing manner. He should be encouraged to adopt the HYVP by ensuring that the requisite inputs reach him in time and by providing him the technical know-how required for its cultivation. Price incentives and post-harvest facilities should also be provided to minimize the risk involved in its cultivation.

15.4. A number of studies have been conducted by the Agro-Economic Research Centres and the Programme Evaluation Organisation to evaluate the HYVP in terms of extent of participation of farmers, area coverage, and production achieved in different seasons and areas. An interesting recent study claims that economic variables are far more important than agronomic variables as determinants of the pace of the HYVP*

15.5. Another important constraint that needs to be examined and tackled effectively is that of land reform. Conditions of tenure have prevented tenants from adoping and reaping the benefits of the new agricultural strategy. The disparities in farm incomes between large and small farmers, landlords and tenants, cultivators and agricultural labourers might be further widened by the new strategy. This problem presents a challenge to the planners. It is hoped that an effective solution will be arrived at and implemented to ensure that the benefits of the new strategy are distributed among all the sectors of the society.

16. Impact of the New Agricultural Strategy on the Socio-Economic Structure of the State.

16.1. *Impact on the Employment Situation :* The HYV technology is both input and output increasing and therefore labour augmenting. It demands more labour at every stage of cultivation. The shorter duration of the HYV crops open up possibilties for multiple cropping which will generate the need for increased agricultural labour throughout the year. At the same time, increasing mechanisation in large sized holdings may displace human labour and may have adverse effects on the employment situation. More employment will also be generated in agro-based industries and services such as fertilisers, pesticides and farm equipment manufacture, distribution and maintenance, irrigation schemes, storing, milling, transportation and marketing, if the green revolution brings about substantial increases in production and the farmer becomes market-oriented. The improvement in the farmers' level of living will, after a certain stage, lead to an increase in the demand for consumer goods. This in turn will help in expanding the non-agricultural sector and create more job opportunities there. Besides, the surplus in the food grains after meeting the consumption demands within the agricultural sector will also be available as wage goods to the non-agricultural sector and remove one of the major bottlenecks to a higher level of employment.

16.2. *Impact of food consumption, nutrition and health.* The initial increases in food production consequent to the adoption of the HYV technology has been in cereals and will help in meeting the unsatisfied demand for calories among the small farmers, agricultural labourers and others who belong to the poorest communities in the country. This will result in an increase in the output and effectiveness of their labour. Attention is

* Season-wise progress of the HYVP in Andhra Pradesh: Role of Economic Variables— G. Parthasarathy and D.S. Prasad, Economic and Political Weekly, September 25, 1971.

already being diverted to improving the nutritive content of the foods consumed. Research in increasing the protein content of HYV food grains and attempts to adopt the HYV strategy to the cultivation of pulses, vegetables, fruits and dairy products are in progress. Educating the common man on the need for balanced diets and offering him cheap food items that assure such balancing will lead to improvement of his health and mental and physical capabilities.

16.3. *Impact on earnings, levels of living, saving and investment:* The impact of the new technology on these aspects need to be studied. It is believed that only the well-to-do farmers have been able to avail of the benefits of the HYVP since only they could afford the increased inputs required. Some studies have contradicted this belief and shown that small farmers have also benefited substantially by the HYVP. These hypotheses need to be tested by studying (i) comparable groups of farmers of different income levels who grow HY varieties of crops and (ii) comparable groups of farmers who grow HY varieties and farmers who grow traditional varieties of the same crop.

16.4. *Impact on the farmer's opinions and attitudes:* The individual cultivator and his behaviour is the most important factor in any programme to improve agriculture. Very little is known about his opinions and attitudes—what influences his decisions and how he reacts to the government's efforts and to market trends. It has been observed that the farmer is greatly influenced by field demonstrations within the village, by his neighbour's decisions and actions and more so by his own trials in his fields. Research on the farmer's motivations and reactions to new innovations conducted through surveys in various areas and among different kinds of farmers is essential. Reasons for the participants not adopting the recommended levels of inputs and practices and for non-participation of other cultivators should be sought. One can venture the hypothesis that the impact of the green revolution on the farmer's attitude will have a lasting influence on his urge for bettering his prospects in all socio-economic fields.

16.5. *Impact on the Infra-Structure:* The impact of the agricultural revolution on storage, milling, transportation and marketing services will be far-reaching. The expansion needed in these facilities must be rationally planned to avoid bottle-necks in the post-harvest operations. It has been observed that different varieties of grain require different kinds of storage and milling facilities. The early maturing HYV crops need to be mechanically dried if the period of harvest is not a dry season. In many areas subsistence farming is continued, and cultivation of HYV is restricted because of lack of storage, transportation and marketing facilities. Improvements in these sectors can help the farmer in becoming market oriented and in securing a greater share of what is paid by the final consumer for his produce. Improved communication facilities will also break the walls of isolation of the rural areas and influence the social and economic status of the farmer by speeding the process of his education and the modernisation of agriculture.

16.6. *Impact on Agro-based Industries:* The agricultural revolution will encourage the growth of agro-based industries: (i) input producing industries such as fertiliser, pesticides and farm implements and (ii) industries using farm outputs as raw materials such as cloth, oil, and jute mills, sugar factories and food processing industries.

16.7. *Impact on the non-agricultural sector:* The marketable surplus of food grains over and above consumption within the agricultural sector will be available as traditional

wage goods to meet the demands of the non-farm development projects. Increased monetary and labour savings that accrue from the progress in agriculture can be siphoned off for investment in the non-agricultural sector. These are important benefits from the agricultural revolution that need to be encouraged.

16.8. *Impact on Prices*: It is expected that the increased production that will follow adoption of the new technology will help in bringing down the prices of agricultural commodities. This will enable the poorer sections of the community to increase their food consumption. The prices however should not be allowed to drop to a level where it will act as a disincentive to the farmer. The prices of food grains are known to influence the prices of most other consumer goods. A continuous check of the prices of foodgrains and other important commodities should be maintained.

16.9. *Impact on size of landholdings and land tenure*: With the progress of the revolution and realisation of the benefits of larger holdings and of mechanisation, farmers might tend to consolidate their holdings and resort to co-operative farming, sharing their inputs and outputs so as to optimize their profits It is feared that the increased financial inputs required by the new technology might drive the small farmer, who cannot afford them, away from agriculture. It is important that the benefits of the agricultural revolution should be shared by the small cultivator and landless labourer. Institutions to lend them the required credit and other inputs and to assist them in forming co-operatives to pool their resources should be strengthened.

16.10. *Other impacts :* The other major impacts of the new technology that need to be studied are in the areas of rural-urban migration, growth and urbanisation of villages, development and spread of formal education that is oriented to the functional needs of the rural people, and changes in the rural society. Increased agricultural earnings, more employment opportunities in agriculture and in agro-based industries and services located in rural areas and better transport and communication facilities might slow and even arrest the migration of the rural population to urban areas and lead to the growth and development of rural areas. Innovation in agriculture that lead to high profits and function-oriented educational methods might induce the farmer to educate his children so that they might make more judicious and enlightened use of these scientific methods.

17. **Conclusion** :

The new agricultural technology has had a beneficial impact on production and on the farmer's attitudes and practices in the State. It would be unfortunate if the initial and not-yet-stabilised success of the new technology led to a sense of complacency and let-up in the efforts. Further efforts are required to continue the pace of growth and to overcome the constraints.

* * * * *

In the discussion of the paper at the January Seminar chaired by Mr. T. V. Natarajan, specialist in Public Affairs, there was a wide ranging discussion of the 14 Tables presented in the paper. Table I which reports on the gross cropped area, gross production and yield per hectare for paddy shows a low and uneven gross cropped area and

gross production for the State. This may in part be due to the fact that it was not till the late sixties that the high yielding varieties programme began paying off. There is also a problem of reconciling Table VI which reports on the HYV seeds and Table VII which reports on their use by districts. The general conclusion was that the official statistics in the State are not reliable and that a great deal of work needs to be done in improving the methodology of primary data gathering and statistical analysis.

Table V reports a four-fold increase in the IAAP programme along with a halving of the yield per hectare between the years 1965–66 and 1970–71. Is this due to the operation of the law of diminishing returns, the yield per hectare diminishing as the area increases because of the bringing in of less productive land, or is it due to diminishing inputs? This is a subject which demands careful investigation. Table VII shows that IR 8 which is used by 50 to 80 per cent of the paddy farmers in other districts is used only up to 10 percent by Thanjavur farmers. Is this differential due simply to water availability and management or to tradition and lack of education?

Table XII reports an alarming decrease in the co-operative societies both in number and membership, while the number and membership of Land Development Banks and the total agricultural loans are rapidly increasing. Is this an indication of the co-operative structure not serving the small farmer? The increase in the number of the development Banks, the commercial Banks and other sources of credit to the farmer will soon raise an important problem of co-ordinating these varying sources of credit. Table XIV is instructive in regard to agricultural policy for the State. It shows a fairly stable programme of levelling through tractors but a rapidly expanding programme of mechanised cultivation. This is an indication of the need for a growing programme of small power tillers for the small farmer.

The effect of the new technology is that it is employment generating. Paragraph 16.1 brings together a series of conclusions in support of this thesis—technology being input and output expanding, multiple cropping calling for more labour, agro-based industries giving rise to new employment, increased farm incomes increasing demand for consumer goods etc. In fact the major social effects of the new technology is that it makes possible equitable distribution of land and the vindication and viability of the small farmer. Using the new technology, the small farmer is as productive as the large farmer in terms of yield per hectare or net income per hectare. What is needed for the State to become a land of small farmers is for the economic incentives and institutional infrastructure to be adequately developed in terms of access to credit and inputs, organised markets and a pricing policy. This section of the paper on employment generation, the development of the credit and marketing infrastructure and the viability of the small farmer needs to be fully documented in a future seminar.

In addition to helping the farmer develop the attitudes and aptitudes necessary for the new technology, in which radio plays an important part, the new agricultural strategy also calls for intensive study of consumer tastes, preferences and attitudes in relation to the new seeds and their products It is not unusual for different crops to be grown by the same farmer for his own consumption and that of the family, for the local market and for the market outside. The attitude of consumers to crops grown with certain fertilisers and pesticides is also emerging as an important factor. There is need for

research into consumption preferences and patterns in relation to the new technology and an educational programme in which the radio can play an important part in a wide ranging public discussion of this issue.

The State is only at the beginning stage of the new srategy. There is need to move rapidly from the laboratory stage to the production stage. There is also need for developing new agricultural production in large industrial complexes.

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The seminar received with profound sorrow the news of the death of Mr. P. K. S. Raja, Reader in Politics, Annamalai University. It recalled his youth, intellectual ablity and social enthusiasm as a member of the Seminar and a member of the Advisory Committee of the Madras Institute of Development Studies. It observed a moment of silence in affectionate memory of his warm personality. It sends his bereaved wife and family, sincere condolences.

BOOKS FOR ALL *

A NATIONAL BOOK PLAN

The right to books

1972 has been proclaimed by Unesco as the International Book Year. The International Book Year marks an important landmark in human history similar to the other landmarks which registered the recognition and acquisition of the rights of man—the right to freedom, the right to justice, the right to food, the right to work and the right to education. In the International Book Year we proclaim and acknowledge the right to books. To ensure the application of this right to all peoples, national and international programmes are being launched and a Charter of the Book has been framed for adoption by all countries and peoples at the time of the General Conference of UNESCO at the end of 1972. This does not mean that we can or will realise overnight the right of all people everywhere to books. We will in the book area continue to have the same gap between the ideal and the actual as we have in other areas—in freedom for all or food for all or education for all. Like all other rights, the declaration of the right to books will be the setting of a norm which can no longer be questioned or argued. It will require a long and painful process for its full realisation. But we are used to this. The existence of vast areas of injustice does not modify the right to justice. It is rather a call to devote ourselves to programmes of action to extend the rule of law over areas where it is non-existent. Or again as in other areas of the rights of man, we will have cases where the right to books is violated consciously or in practice. The existence of discrimination does not only not modify the right to equality; it calls us to fight all sorts of discriminations so that the area of equality might be expanded. So too the fact that books are not available to millions of men and women does not abridge the right to books. It is a call particularly during 1972, the International Book Year, to develop programmes of book action which will ensure the realisation of this right for all people at all times and everywhere in the shortest possible time.

For the right to books is simply the right to thought and knowledge—those unique features in their particular manifestation which distinguish man from the 350,000 other living species. I am not saying that there are not other primates or living species which do not possess the capacity to thought or knowledge. I am saying that the kind of thought and knowledge which characterises man is unique to him and everyone who belongs to the human species is born with this right which books embody, Again I am not saying that thought and knowledge can be acquired or communicated only through books. We have in this country the oral tradition which is still dominant in parts of our culture. In Carnatic music and dance, it is the oral transmission which through history on today is predominant over the written word. I have found that the oral tradition has very strong roots even in the most advanced societies. In UNESCO, after the most carefully prepared and detailed reports have been prepared and published in the

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* Extracts from the Sital Primlani Memorial Lectures delivered by Dr. Malcolm S Adiseshiah in Delhi in September 1971.

four official languages of its General Conference, I was invariably asked by the representatives of European and North American countries to introduce orally the book or the report. I soon found out that the highly educated people and representatives of Governments were either too busy for, or traditionally averse to reading the publications placed before them and so listened with avidity to my oral presentation. Further in these days of expanding mass communication, knowledge transmission has other important alternative instrumentalities. In our country, the Government's recent report states that 95 per cent of our people are covered by radio facilities. We are also the second largest film producing nation in the world. By the end of the Fifth Plan, we will have country-wide television network with a terresterial cum space satellite infrastructure. And so we will be sharing in this country, in the communication explosion which other countries in Europe and North America have already experienced. All that I am saying is that neither our revered oral tradition nor our expanding and exploding other communication media can or do replace the book as the written support, stimulator and accelerator of thought, as the permanent repository of knowledge. In other countries as in Africa with its wonderful oral tradition or Europe and North America with their oral tradition which I have referred to and their developed communication media, the book is not only the basic and complementary tool for thought and knowledge, its value and utility have been widened, enhanced and strengthened by the other channels and media.

I know that the case for Books for All rests on a wide variety of economic, social, cultural as well as moral grounds. I will later deal with the economic, social and cultural functions of and demands on the books. Here I wish to place the call of the International Book Year—Books for All—on the moral plane from which there can be no turning back, as a spiritual imperative which goes beyond a cost-benefit and other argumentation, as a human right to which every man, woman and child is entitled and from which norm all our actions must be judged. For that moral imperative imposes obligations in this country on the Government, the book industry, the educational system and the citizen, which we have to understand clearly during 1972 and discharge rapidly and effectively in the ensuing years of the seventies.

Present status and future prospects of books

Against this obligation of Books for All which we shall be assuming next year, let us take a look at our stock of books, their production, distribution and use. For all statistical material in this paper, I am using the United Nations and UNESCO 1970 Statistical Year Book as my source supplemented by data from local surveys. In 1960 we had 19,714,000 volumes stocked in one National, 71 university, 209 special and 1211 public libraries. The total stock of books can be brought upto date by adding the production of books for the subsequent eleven years. In 1966, 12123 titles were published; in 1967, 10617 titles and in 1968, 11413 titles with an average 4000 run for each title. By 1971, the book stocks in the above libraries stood at 21.2 million volumes. If all district and local libraries in the country are taken into account, we have 35000 libraries with a total of 50 million volumes. Our annual book production is around 11000 to 12000 titles, with 44 million to 48 million copies. This means we have 22 book titles per million of our population, as compared to 32 book titles per million in Asia and 418 per million in Europe. We have less than 3 per cent of the world book production.

The language distribution of our produced books in 1968 was out of a total of 11413; 3306 were in English and 8086 in our national languages, with the following

breakdown—Hindi: 2700, Bengali: 1116, Marathi: 1084, Tamil: 802, Gujarati: 702, Malayalam: 418, Kannada: 371, Telugu: 310, Punjabi: 152, Urdu: 130, Oriya 84, Assamese: 83 and Sanskrit: 74. With a little over 80 per cent of our production in national languages, we seem to be moving in the right direction as far as the question of the access to books is concerned.

The subject matter of the book output presents a mixed picture, In the 1968 production of 11413 titles, 1351 were in the sciences, and the rest of over 10000 in philosophy, religion, literature and social sciences. Of the total, 9778 titles were educational in the broad sense of the term, of which 566 were school textbooks and 1635 were general. Five hundred and sixty-one (561) of the total titles in 1968 or 5 per cent were children's books. Translations average around a thousand titles a year. In 1964, out of 1051 translations published in India, 439 were from English, 74 from Russian, 29 from French, 17 from German, with literature being the most translated (395) followed by social science (177) and religion (145). In 1965, out of 840 translations, 394 were from English, 28 from Russian, with literature being in the forefront (293) followed by religion (149) and social science (124). In 1966, out of 840 translations, 375 were from English, 44 from Russian, 20 from French with literature leading (366) followed by social science (127) and religion (119). In 1967 out of 1051 translations, 482 were from English, 49 from Russian and 24 from German with literature being responsible for 355, religion 196 and social science 157 (Just as an aside, I would like to point out that there were around 60 to 90 translations from Hindi to other non-Indian languages, with literature leading the way. Out of 152 most frequently translated authors in the world, Tagore is is the only one who enters in the 56th place, with 13 translating countries who translated him 378 times in 1960-64, 31 times in 1965, 54 times in 1966 and 36 times in 1967).

From this rather sketchy statistical picture that I have outlined, I draw two conclusions and present five targets for seventies.

First there is a serious gap in the world of books between the developed countries and India, and this gap is growing wider every year as the following three tables show:

TABLE 1

NUMBER OF TITLES PER MILLION INHABITANTS

Country	*1955*	*1960*	*1965*	*1967*	*1968*
Europe	320	383	450	465	475
India	19	20	21	22	22

TABLE 2

PERCENTAGE DISTRIBUTION OF BOOK PRODUCTION

Country	*1955*	*1960*	*1965*	*1967*	*1968*
North America	5.6	6	14.2	14.4	14.6
India	1.5	2	2.6	2.8	2.9

TABLE 3

CONSUMPTION OF PAPER IN KILOGRAMS PER INHABITANT PER YEAR

Country	*1950-54*	*1967*
Europe	6.8	16.9
Japan	4.0	12.2
North America	26.5	43.5
Oceania	7.1	10.3
USSR	2.1	4.2
India and other countries of Asia	0.3	0.9

Thus in all areas of book production and distribution, the number of titles produced per million inhabitants, the percentage of total books produced and the paper consumed, there is a widening international disparity between the developed countries which are the areas of abundance and India which faces growing scarcities. There is a curious identity between the rich nations and poor nations economic gap—its outreach and its widening reach—and similar growing gap in the book field. The identity between the two gaps is of course due to the book gap being a function of the economic gap.

Second there is a very serious gap within the country between the demand for books and the supply of books. I am advisedly equating the need for books with the demand for books. I know that this is an economic heresy and a sociological nightmare. One is abjured to distinguish between wishes and horses, but only as far as beggars are concerned. One is brought up in the classical theory which distinguishes between need which is an emotional agglomerate and demand which is backed up with purchasing power, a quantum varying with price. One is taught to differentiate between desires and aspirations and felt and expressed needs. But as far as the book is concerned, I take the position that like air, water, education and health, the International Book Year reminds us that every one needs it, every one should want it and anyone has a right to it. This overriding norm of Books for All has its economic aspects of costs, prices, break-even point and returns and its socio-cultural backdrop of reading traditions, literacy levels etc. to which I will refer later. But the point of departure for us is the need of all, the desire of every one and the right of the entire reading community to books. It is from this point of view that we have a large and yawning gap within our country in regard to the supply of and demand for books.

And so I propose that using as base the minimum targets established at the Asian Rendezvous in Tokyo in 1966, we adapt and adopt five targets as firm decisions for the seventies during the International Book Year.

The *first target* is to expand books for education including literacy manuals and materials from the present 16 pages per person per year to 96 pages per person per year by 1980. In making this proposal I am increasing slightly the Tokyo target of 80 pages.

The *Second target* is to expand general books from the present 4 pages per person per year to 48 pages per person per year by 1980. I realise that Tokyo set the general

book target at 80 pages but given the various needs and priorities that we face, I do not believe that we can aim at a more than twelve-fold increase in our general book publishing. Together the first two targets of educational and general publishing that I have proposed will involve a doubling of our book title production from 12000 to 24000.

The *third target* that I propose is a doubling in the nnmber of our libraries and a reorientation in their functioning. Our public, district, panchayat union and circulating libraries must increase from the present 35000 to 70000 by 1980 and together with reorganised functioning will be one means of the targeted 144 pages per person per year reaching all our peoples.

The *fourth target* is that every educated family should on the average purchase 6 books a year moving upto 12 by the end of the seventies. I mean by an educated family, of which I compute we have 60 million today which should be increased to 120 million by 1980, a family in which there is at least one member who is educated upto the 8th year of school.

The *fifth target* that I propose is that the production and distribution of books should involve an investment moving from the current 0.1 per cent of our gross national product to 0.3 per cent by the end of the seventies. This involves an increase in the investment level of the book industry from the current investment of Rs. 36 crores to Rs. 150 crores by 1980, requiring an annual investment of Rs. 78 crores and an annual average growth in investment rate of 20 per cent.

To sum up, I set before ourselves, as the book trade, book consumers, educational agencies, Government authorities — Union, State, District and Panchayat, the book programme for the seventies as a decision that we should make in 1972, the International Book Year. With the aim of assuring Books for All Indians by 1980, we should produce 144 pages per person per year to be distributed by some 70000 libraries of various kinds and acquired by each of our 120 million families, starting with an average of 6 books and going on to 12 books per year. This would require an average annual investment of Rs. 78 crores in the book industry.

Function of b oks as pointers for national action

This programme of Books for All performs several functions :

Educational : The *first function* is that the book is the means and the tool of education at all levels. We are as a country committed by directive Article 45 of our Constitution to universalising education : The State shall endeavour to provide, within a period of ten years from the commencement of this Constitution, for free and compulsory education for all children until they complete the age of fourteen years. All our reports state that we are near a limited realisation of this directive principle. In 1968-69 we had enrolled 77.9 per cent of children in the age group of 6-11 and planned to have 85 per cent enrolled by 1973-74. Some States like Kerala and Tamil Nadu have exceeded these targets and have reached or will soon reach the 100 per cent level. Our literacy rate has increased from a very low 24 per cent in 1961 to a low 29.35 per cent in 1971. Here

again plans are under way to launch a crash programme to make 10 million more adults literate during the next three years in a nation of over 380 million illiterates. In reality our educational effort in the school area is lagging as much as that in the adult literacy area. Our claim of 77.9 per cent of school enrolment is eroded by the dropout of 55 to 60 per cent of children before the fourth year of school, which is the minimum schooling needed to attain literacy. There are of course many causes for the non-attainment of our educational goal of universal education but one important cause is the lack of books.

Education requires a teacher, a student and a book. UNESCO repeatedly reminds us that there is no sense in educational planning if the pupils do not have the necessary textbooks. In fact, it reminds us that free textbooks are the inevitable corollary of compulsory education. Shaving requires a barber, a man with a beard and a razor. If you have the first two, but no razor, there can be no shaving. So too if you bring the teachers and students together and there are no books, there can be no education. In this context the five point Educational Programme announced at the budget session of Parliament to make primary education free and vocationalise secondary education is very good. It has one element missing—the provision of free books. School and university books are functional tools for attaining the ends of education. There are no substitutes for them.

So too the major means to make our illiterate people literate is through the printed word. Here we face an urgency both because time is not on our side and because of the nature of the problem. Time is against us because with the book famine in the country we are daily growing more illiterate. India in 1971, our census tells us, is more illiterate in absolute numbers (382 million) than India in 1961 (330 million). In the absence of books and pamphlets the alarming rate at which we are relapsing into illiteracy can be seen in the following table computed by UNESCO :

TABLE 4

THE RELAPSE INTO ILLITERACY

Age group	*Illiteracy Rate*		
	1950 %	*1960* %	*Variation* %
Total population	68.1	61.9	— 6.2
Persons born between			
1946 and 1950	—	44.8	—
1941 and 1945	—	45.0	—
1936 and 1940	52.1	49.1	— 3.0
1926 and 1935	57.9	56.1	— 1.8
1916 and 1925	63.4	63.7	+ 0.3
1906 and 1915	70.4	73.3	+ 2.9
1896 and 1905	79.3	83.3	+ 4.0
Before 1896	85.8	88.3	+ 2.5

Moreover, the book famine as it affects our adults is not simply limiting our future productive capacity. By affecting the quality of our industrial and agricultural workers, it acts as current constraints of our total production and consumption and prospects for equitable distribution today. During a recent visit to Cuba, I noticed that books were more freely available and at lower prices than most consumer goods in the country. When I remarked on this to President Castro, he said: The first thing we did on assuming power was to spend two years, 1960-61, stopping everything and educating the 60 per cent illiterates in the country. The next thing we did, on your adviee from UNESCO, was to make books almost as freely available to the people as water. With the literacy education given, the books help people not only to maintain but increase and improve their education. And so today when a Cuban is thirsty he goes to a tap for a drink of water, when he wants to know something or what is even more interesting, when he has nothing else to do, he reads a book or a pamphlet. But this provision of the essential tool of education is not only the characteristic of socialist countries like Hungary, Poland and the Soviet Union, it is the normal practice in all countries where education is effective and truly universal. In the United States where education is the responsibility of the local community, what we in this country call the panchayat or the municipal council, where there is no ministry of education directing a national system of education, public authorities at various levels spend half a billion dollars ($ 500,000,000/-) a year in buying textbooks and school library books. Thus in all countries, even the most affluent, the book is recognised as the essential tool of education for children and adults. It is also recognised that it is generally beyond the means of parents, children and adults to provide themselves with the necessary books for school and adult education. Hence the intervention of the State has been found essential to buy, give and lend children and adults their basic textbooks and also to provide school and adult libraries the supplemental works essential for sound education. If this is the situation in rich countries, how much more needed is the intervention of our Government authorities in a poor country like ours where children, parents and adults have even less means to buy the needed textbooks? Hence my **first conclusion** proceeding from the fact that the book is the educational medium, is that our authorities at all levels from the Centre to the Panchayat should provide adequate funds in every education budget for the purchase of books for students and adults.

Juvenal: A *second function* of books is to serve the needs and special interests of children, becoming an essential part of their life and existence. Children live in a world of their own, a world of make-believe and fantasy, a world of curiosity, seeking and searching. Their methods of communicating and learning is the method of play and games. All work and no play must have made a very unchild-like Jack a dull boy. In fact we are today coming to a stage where the distinction between work and play is disappearing. Work is play and play is work. So too the play and game method of communicating and learning which is characteristic of the child must be reflected in the books for children.

Children's books demand certain pre-requisites. *First* is the need for developing and training writers and authors who can create children's books. Because in this case writership is an act of creation. In every State we have a society of authors and writers of children's books who need support and encouragement from the public and publishers.

Only the other day I was privileged to participate in the 21st anniversary celebrations of the Kuzhandai Ezhuthalar Sangham, the association of writers for children in my State, and saw for myself how in 20 years the Sangham has been able to gather together 200 writers, artists, publishers and children's agencies, organise annual children's book exhibitions, participate in exhibitions in other States, award annually prizes to successful writers and the best produced children's book, conduct a survey of children's literature by analysing 253 children's books and organise conferences, literary and art workshops for children's writers and artists. Our Annual Children's Day, November 14, is celebrated by releasing special children's books, of which it has so far released over 500. The importance of cross fertilisation in this field is highlighted in the fact that this particular association was founded from an inspiration derived here in Delhi. In November 1956 at the Sahitya Akademi National Book Exhibition, the Tamil section was organised by a young Tamil poet who on receiving the President of the Akademi, Jawaharlal Nehru and showing him round the children's books in Tamil had the thought, that to celebrate the birthday of this lover of children, books for children must be developed. And so the Sangham was born.

There is also in this country the need to develop the kind of relationship which exists in other countries between writers of children's books and producers of children's films, broadcasts and television programmes. If it is generally true that communication through books cannot be regarded as an isolated phenomenon and that the support of the written word is essential for the effective use of all other audio-visual media, it is even more true that the children's world of books, radio, film and television should be so interlinked. In fact, I believe that carefully designed children's books should provide the basic infrastructure for children's plays, films and radio.

A further element in book for children is that it is par excellence an area of international co-operation. Children's books without attractive and eye-catching illustrations are useless. However good a children's book may be, it will remain unsold in the bookshop window or will be gathering dust in the children's library shelf unless it can catch the attention and rouse the imagination of children. But illustrations, designs, line and coloured drawings and the requisite paper are expensive and force production costs up. On the other hand, children's books must be priced low because their turnover is rapid and they are paid out of the marginal portion of the family budget. It is here that there is a vast area for international co-operation. In the Soviet Union, United States, United Kingdom, France and Germany the output of children's books is equal to that of textbooks. The Book Charter which is being developed for adoption during the International Book Year could make provisions for International Co-edition of some children's books in which the text could be produced in our languages, using the same illustration, for certain blocks which can be employed in multilanguage editions, and for the grant of rights for certain requested illustrations from specialised publishers. My **second conclusion** is that the development of children's books in the country calls for active promotional programmes to develop the creativity of authors and artists and constitutes a major field for international co-operation.

Development: A *third function* of the books is that it is the instrument for the economic growth of the country. What the hybrid seed is to the production of food, the

technical and scientific book is to the training of our scientists and technical personnel, engineers, agronomists, farmers and technicians. In fact books are the major means of communication of knowledge and the comprehensive repository of information in the crucial developmental fields of science, engineering, agriculture, medicine and technology generally. No economic growth is possible without the intensive use of the scientific and technical know-how embodied in books. And this know-how must be accessible readily. Access to the right book at the right time for the scientist, engineer or agronomist could have a multiplier effect of the economy. Indeed a nation's production and consumption of books is one of the sure indicators of its stage of economic growth. From this point of view, of what I would call the economic growth generation role of books, we are not in a very happy position in the country. I have already referred to the fact that in 1968 out of 11413 titles only 1351 or about 10 per cent were in the area of scientific publishing. Being the tenth most important industrial nation and the third largest producer of cereals, our country cannot continue to be the 42nd in the rank of scientific book publishing.

Action to improve and correct the situation in the seventies must be taken at several levels. *First* there is a need for Government to finance the production on a massive scale of books on applied science, technical manuals, work book and work sheets for practical exercises and self-teaching. *Second* the universities, research institutions, industrial companies and the book trade must promote in every way scientists, technologists and research workers to publish an increasing number of quality books in science, technology, medicine and agriculture addressed to our growing army of engineers, chemists, doctors, agronomists, technicians and industrialists. *Thirdly* the financing of the publication of all good theses, papers and reports by our nantional research agencies, the CSIR, ICAR, AIMRC, AEC, UGC and ICSSR, will ensure an expanding and continuous supply of original and adapted Indian scientific source materials. *Fourthly*, the development of a cadre of scientific translators to translate scientific and technical literature from foreign languages into our languages will help increase our scientific book stock. *Finally* the importing of scientific and technical books should have the same priority as the import of stategic capital goods, in terms of removing or simplifying procedures relating to quotas, licensing and foreign exchange. My **third conclusion** is that to fulfil their developmental role there should be a crash programme during the seventies for increasing rapidly the supply and availability of scientific and technical books. This will involve increasing local production in this area from 10 to 30 per cent of the book titles, and doubling the volume imported.

Cultural: A *fourth function* of the book is that it is a repository and means of preservation and dissemination of our pluralistic cultural heritage. The poetry, drama, legends, the religious and philosophical insights of our country and its many peoples are embodied in our books and are a unique means of their transmission from one generation to the next. For us in India this cultural role of the book is of special importance. *First* we have in this land what UNESCO's Constitution calls the fruitful diversity of cultures. This diversity is the source of individual enjoyment, community consciousness, and national richness and strength. What would our intellectual and spiritual life be like if a book from Kashmir carried the same drama, portrayed the same dance, and spoke the same language as one from Kerala? Our pluralism goes deeper. We speak of Tamil Nadu or Uttar Pradesh but within each State we have so many diverse traditions and living sub-cultures. It is our books which record this diversity and make them

known and available to us. *Second* there is the unity in our diverse cultures which constitutes the basis of our national integration and spiritual oneness. This unity is the unique quality of life, which breathes through our many cultures and sub-cultures. Whether we read the *Ramayana* of Valmiki from the north or that of Kamban or Satyanarayana of South whether it is Buddha of the Uttar Pradesh, Guru Nanak of the Punjab, Vivekananda of Bengal, Maharishi of Madras, Gandhi of Gujarat or Aurobindo of Pondicherry, whether it be Tagore's *Gitanjali*, Ghalib's *Sunset*, Subrahmanya Bharati's *Nam Nadu*, Valluvar's *Kural* or Sarojini Naidu's *Dawn*, there shines forth the basic unity of Indian cultural values, of tolerance, truth, harmony and peace. The cultural role of books in our country around which our national unity and integration centre is the never changing, permanent yet, subtly diversified quality of life to which it gives expression.

It is at this point that our books in India in discharging their cultural role have also an international dimension. On 4th November 1966 which was its 20th anniversary, UNESCO adopted the Declaration of the Principles of Cultural Co-operation which begin with the affirmation :

... Each culture has a dignity and value that must be respected and preserved

... Each people has the right and duty to develop its cultures.

... All cultures form part of the common heritage belonging to all mankind.

The Declaration ends with the statement that cultural co-operation is a right and duty for all peoples of nations which should share with one another their knowledge and skills particularly through production and exchange of books and should stress ideas and values conducive to the creation of the climate of friendship and peace. Our books in India have this international role, of stressing ideas and values which would promote peace instead of war, friendship instead of antagonism, tolerance instead of hostility. I have a feeling that in recent years under our economic growth and geo-political pressures, our books are losing their national and international cultural vocation to promote the quality of life of which we are proud heirs. Do we need the excuse or stimulus of a Gandhi or Tagore or Ghalib or Thomas or Aurobindo Centenary to produce books which reflect our cultural genius and vocation? My **fourth conclusion** is that we should return to the great cultural tradition which our books represent and promote in every way the publication of books embodying and explaining that tradition.

CORRESPONDENCE

A Comment on Problems of Growth in Tamil Nadu—1970 (Vol. II No. 1)

By Dr. V. SHANMUGASUNDARAM,

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The strength of this paper on growth is that it assembles a sequence policy, instruments and areas for action, and a system of reasoning which would be helpful for promoting economic growth in the 1970's.

One general comment is that whereas, one should congratulate the Government of Tamil Nadu in presenting " An Economic Appraisal—1971 " one cannot help expressing the need for critical studies in Tamil Nadu statistics. A look at table III of Dr. Adiseshiah's paper reveals the effort to tie the Economic Appraisal with Economic Times publication. We need in due course district growth rates of money income and real income and also computation of State income by three account techniques (i) factor cost (ii) market prices and (iii) expenditure-income balance. Besides, the issue of imputation of value, may differ from district to district and unless we have comprehensive — " District dossiers ", the economic image of a district cannot be viewed, in real terms.

Paragraphs 7 to 11 give an objective of growth policy and instrument. I wonder whether, one more policy instrument namely, (iii) " *A fuller utilisation of capital* " cannot be added under paragraph 8 after item (ii) and the rest renumbered to get six policy instruments in total

A word on industries. Tamil Nadu appears to rely very heavily on inter-regional trends and hence the market for Madras industries is either all India or the World, so far as, highly complex products are concerned.

Madras agriculture has done well in rice production but the output of pulses and cotton has not kept pace with the physical requirements of the people of Tamil Nadu. Here not only quanitative increase in output, but also the price rationale to take advantage of the price—elasticity of demand for food articles should be considered in drawing future policy of output and distribution.

Education, Family Planning and Health Measures, have to be viewed as a package of the Economics of Human Resources. The present educational system whether it is at the point of graduation in the high-school, or at the College degree level is still unconnected with the process of Economic growth. Compared into the earlier centuries, the mid 20th Century offers, and Tamil Nadu in 1970's certainly provides abundant spread of liberal education in social, economic, and para-scientific areas through the

newspapers, journals, the radio and other means of mass communication. Hence there is a paramount urgency for highly qualitative and knowledge constructing kind of liberal studies at the high school and collegiate levels to a limited number of those who would enter administration, politics and journalism and allied occupations. The man power supplies of such qualitative and global type of liberal education should be what the employment market can bear. The rest of the streams from high school graduation or college graduation should take note of employment potential in agricultural, industrial, commercial and social services. Man-power planning can be pursued, without any built in contradiction between job oriented education and liberal education, because the former could be pursued for employment purpose and the latter for enlightenment and throughout life. Thus we can fully utilise the human resources of Tamil Nadu, and hope for economic growth consistent with the main features of social justice and near full employment.

This paper on problems of growth in Tamil Nadu is a definite and highly valuable literature on Indian economic development. The approach is pragmatic and the policies elucidated have a high relevance to the contemporary turn of economic events, in Tamil Nadu and the rest of India.

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